MVVA TEAM Framing A Modern Masterpiece

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Framing A Modern Masterpiece

The United States National Park Service
The City of St. Louis

STAGE 3 Framing a Modern Masterpiece The City + The Arch + The River

12 August 2010

MVVA TEAM

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CONTENTS

1.	The MVVA Team Proposal	7	7. North Gateway Technical Notes	159 171
2.	New Frontiers	19		
			8. South Gateway	183
			Technical Notes	195
3.	Planning Framework	31		
			9. JNEM East Wetland	207
4.	Historic Landscape & Waterfront	45	Reserve	223
	Technical Notes	75	Technical Notes	
5.	Museum Expansion	87	10. Beyond 2015	233
	Technical Notes	113	Technical Notes	249
6.	West Gateway	125		
٠.	Technical Notes	145		
		10		

1. The MVVA Team

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Successful city connections give people two inseparable things: ways to traverse urban obstacles and reasons to want to. Our landscape-based approach to the Jefferson National Expansion Memorial provides both, establishing physical and programmatic continuity between downtown St. Louis, the Arch grounds, the levee, and the Illinois bank. By reorienting itself, physically and culturally, toward the life of the city, and by pioneering constructed urban ecologies, the Memorial serves as a 21st-century paradigm for urban National Parks—and that, in turn, makes it a foundation for sustained social and economic vitality on both sides of the Mississippi.





HISTORIC LANDSCAPE

A new diversified planting regime remembers Dan Kiley's vision by creating a coherent frame of informal landscape that complements the processional allées. Supported by a network of accessible paved and mown paths, the revitalized grounds accommodate a variety of passive recreational activities. A reorganized approach to the site's hydrology and an organic maintenance regime prevent erosion and algal bloom, and turn the landscape into a living laboratory of urban ecology and sustainable practices.



WEST GATEWAY

A new Memorial Drive entrance to the Museum of Westward Expansion addresses the Old Courthouse, continuing the urban energy created along the Saarinen vista by Citygarden and giving Luther Ely Smith Square new importance as a central civic plaza. A one-block-wide deck over Interstate 70 establishes pedestrian sovereignty, breaks sightlines into the highway trench, and mitigates traffic noise, while remote ticketing facilities liberate visitors to enjoy the city and Memorial grounds while they wait to ride to the top of the Arch.



NORTH GATEWAY

By removing the existing Memorial garage and the terminus of Washington Avenue, which is used almost exclusively by garage patrons, our proposal allows the openings in the Eads Bridge to serve as portals between Laclede's Landing and a dynamic civic landscape. Accessible pathways stitch together a mix of neighborhood programs and event space, including a large playground, comfortable shaded seating, an earthen amphitheater, and the Gateway Urban Ecology Center, which offers afterschool programs and summer camps for St. Louis and East St. Louis students.





SOUTH GATEWAY

Immediately south of the Arch grounds, an underpass park creates a mixing chamber of proposed and future connections between the city and the Memorial, and appropriates the Poplar Street Bridge as a part of the threshold landscape. Atop a new 387-space parking facility, a medium-scale venue—a beer garden in summer, a skating rink in winter—echoes St. Louis history and serves as a focal point for the emerging Chouteau's Landing neighborhood.







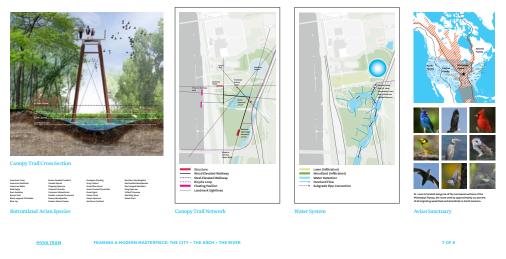
MVVA TEAM

AMING A MODERN MASTERPIECE: THE CITY + THE ARCH + THE RIV

JNEM EAST WETLAND RESERVE

On this formerly industrial land, a system of treetop walkways allows visitors to observe reconstructed wetland ecologies, capitalizing on the site's location along the Mississippi Flyway and creating new views of the boundless horizon of the American Midwest. Our proposal uses water drawn from the East St. Louis stormwater infrastructure to manufacture new urban habitat for a diversity of bird species, supported by new National Park Service ornithological and hydrological research centers .





HISTORIC WATERFRONT

Our proposal removes the existing waterfront streetscape in order to reinstate the full form of the cobblestone levee. Sculptural river gauges mirror the monumentality of Saarinen's river walls and frame the use of the levee surface in relation to the fluctuating river edge. The single central stage is replaced by a gentle swell in the cobble surface that can accommodate a broader spectrum of markets, concerts, and seasonal attractions.



2. New Frontiers

NEW FRONTIERS

A NEW KIND OF PARK, A NEW KIND OF CITY

Even among competitions of its size, Framing a Modern Masterpiece: The City + The Arch + The River is unique by virtue of the complexity of its fundamental challenge and its potential to set a lasting standard in the design of North American cities. It is a project with two protagonists: the city, which is striving to revitalize the downtown core and release the interstate highway system's stranglehold on the waterfront; and the National Park Service, which is in the process of reestablishing its relevance, reaching out to previously neglected audiences, and defining for itself a 21st-century urban presence.

This competition is, in essence, a local manifestation of a larger confluence of contemporary forces, in which cities all over the country and the world are grappling with their infrastructural legacy and attempting to responsibly reincorporate ecological function, sustainable practice, and environmental education after decades of neglecting all three. And it is an opportunity to establish for the Park Service a new role as the centerpiece of sustainable American cities.

Landscape architecture, with its particular interdisciplinary fluency at the intersection of ecology, engineering, and design, provides a particularly good framework for approaching these globally relevant challenges. Our landscape-based proposal focuses on the ways that the interests of the city and the Park Service are mutually reinforcing. Downtown St. Louis

will thrive with a vibrant National Park at its center—and the National Park will establish local relevance if it embraces the city as a new frontier, an environment that is in need of fresh historic, interpretive, and environmental attention.

THE LIVING MEMORIAL

Throughout history and around the world, what makes urban monuments successful is an iconic form linked to a rich web of everyday experiences. Destinations such as the Brandenburg Gate, the Eiffel Tower, the Washington Monument, and Barcelona's La Sagrada Familia combine their status as international attractions with elements of civic assets and neighborhood amenities. They write themselves not only into national histories and regional identities but also into the daily lives of the people who live nearby. The commemorative mission of these places is honored, not polluted, by the quotidian activity that surrounds them.

George Howe's program for the first stage of the 1947 competition to design the new Jefferson National Expansion Memorial called in part for a "living memorial" to Thomas Jefferson, an active function for the park that would celebrate, in Howe's words, "life as lived, rather than as remembered." He was interested in making the new Memorial a place that would serve not only as a national attraction but also as a local

generator of civic energy and activity, something that St. Louisans would visit and participate in as part of the rhythm of their daily lives. The 172 Stage I entries included National Science Foundations, Museums of Architecture, and Centers for Democratic Education. (Eero Saarinen and Dan Kiley's submission proposed making the Memorial the site of a branch of the fledgling United Nations.)

At the heart of our proposal is a renewed dedication to the spirit of that original vision. In 2015, the memorial will be more than a once-a-generation tourist destination. It will be St. Louis's core civic space, populated daily and in all seasons. It will be visited not only by tourists but by local families after school, by downtown workers on their lunch break, and by residents of revitalized neighborhoods nearby. The addition of the JNEM East Wetland Preserve, with a system of treetop walkways and a dual mission of research and recreation, means that the Memorial will be a single park bisected by the Mississippi River, shared by residents of both St. Louis and East St. Louis. The Memorial will feature energetic activity at its edges to complement the calm reverence of its interior. It will be a common space for gatherings of all sizes and kinds—a place where the democratic spirit of Thomas Jefferson is lived, not just remembered.



THE BRANDENBURG GATE Berlin, Germany



THE EIFFEL TOWER Paris, France



THE WASHINGTON MONUMENT Washington, D.C.



LA SAGRADA FAMILIA Barcelona, Spain



JEFFERSON NATIONAL EXPANSION MEMORIAL St. Louis, Missouri









21

NEW FRONTIERS

EXPANDING THE NPS PROGRAM TO ENGAGE LOCAL CULTURE

THE ECOLOGICAL CITY

The story of westward expansion is the story of our relationship to our land—our history of navigating it, mapping it, cultivating it, conquering it, surrendering to it, and ultimately making it our own. St. Louis, sitting at almost the geographic center of the country, at a crossroads of natural and cultural infrastructure. has always had a central position in this narrative. The city is the site of a fundamental shift in the character of the Mississippi; in contrast to the engineered edges to the north, the river flows undammed from St. Louis all the way to the Gulf of Mexico. The city also marks the divide between eastern precipitation agriculture and western irrigation agriculture. And St. Louis has had a leading role in the history of American transportation, as the origin of the Oregon and Santa Fe Trails, a booming focal point of the steamboat economy, a leader and a victim of the transition to the railroad era, and one of the earliest hubs of the interstate highway system.

In our proposal, the Memorial suggests a new paradigm for an urban federal parks project, one in which these different and often competing natural and cultural elements are reconciled as a powerful engine of urban renewal. Many of our national parks preserve wilderness, maintaining an ideal condition that existed prior to human intervention. This is of course neither

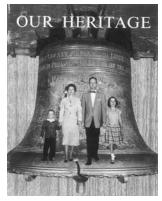
possible nor desirable in city centers. The inevitable artificiality of the man-made should instead provide epigrammatic suggestions of the natural world while functioning as society has all too recently learned it should—in harmony with natural ecologies.

In the era when St. Louis was known as a booming frontier city, the frontier was a physical divide between the known and the unknown. The 21st-century frontiers are less literal, but no less important—we are only beginning to define and navigate a new sustainable relationship with the land we inhabit. The Gateway Arch need not be reduced to a reminder of frontiers past. The Memorial can be a concrete force for changing the patterns by which St. Louisans—and all Americans—live their lives, whether by exhibiting healthy urban hydrological systems and organic maintenance regimes, pioneering innovative energy generation and conservation methods, or even just inspiring its visitors to walk or bike throughout the downtown. With the National Park Service as its partner, St. Louis can make itself into a new kind of frontier city.

PROPOSED SUSTAINABILITY INITIATIVES

- Fully organic soil restoration and maintenance regime eliminates chemical pesticides, herbicides, and fertilizers.
- Rot-resistant benches made of American black locust, unlike common alternatives like Ipê, do not contribute to rainforest destruction.
- 3. Energy is conserved or innovatively generated by a variety of means, including geothermal (in the Museum of Westward Expansion), river turbines (in the floating pavilions), photovoltaic cells (on the river gauges), and green roofs (on the Gateway Urban Ecology Center).
- New accessible pathways, pedestrian connections to the downtown, a new bicycle loop, and street narrowing measures incentivize walking and cycling not only within the Memorial site but throughout St. Louis.
- 5. Most importantly, all these measures will be openly legible and communicated to visitors, either through a new pedagogical program of signage or through the Urban Ecology Center, which will focus in part on teaching sustainable technologies and practices to students from St. Louis and East St. Louis.

LEARNING



HISTORIC "INTERPRETATION"

EXPERIENCING



CULTURAL CONNECTION

ADMIRING



"PRESERVATION" OF NATURE

UNDERSTANDING



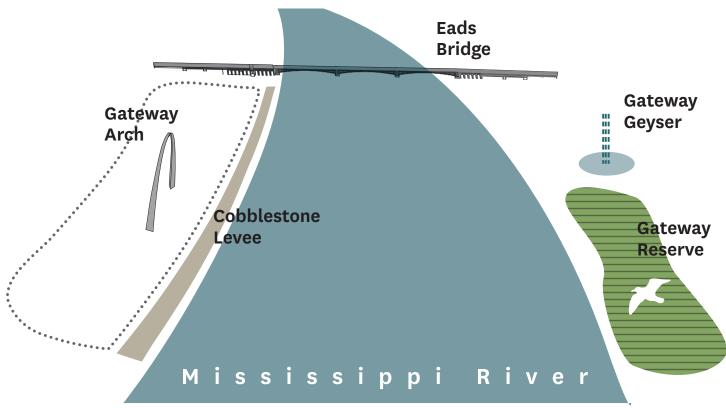
CONSTRUCTED NATURE

23

A NEW MONUMENT

A MONUMENT FOR A NEW ERA

Since its founding, St. Louis has derived its sense of identity in part from a series of monuments, both natural and built—the Mississippi River, the levee, the Eads Bridge, the Gateway Arch, the Gateway Geyser, and now, we hope, the JNEM East Wetland Reserve, which will fuse the built and the natural in a new icon on the Illinois shore.





NEW FRONTIERS 25

MEETING PROJECT GOALS

	Historic Landscape & Waterfront (Chapter 4)	Museum Expansion (Chapter 5)	West Gateway (Chapter 6)	North Gateway (Chapter 7)	South Gateway (Chapter 8)	JNEM East Wetland Reserve (Chapter 9)	Beyond 2015 (Chapter 10)
1. Create an iconic place for the international icon, the Gateway Arch	•	•	•				•
2. Catalyze increased vitality in the St. Louis region		•	•	•	•	•	•
3. Honor the character defining elements of the National Historic Landmark	•	•	•				
4. Weave connections and transitions from the City to the Arch grounds to the River	•	•	•	•	•	•	•
5. Embrace the Mississippi River and the east bank in Illinois as an integral part of the National Park	•					•	•
6. Reinvigorate the mission to tell the story of St. Louis as the gateway to national expansion	•	•				•	•
7. Create attractors to promote extended visitation to the Arch, the City, and the River	•	•	•	•	•	•	•
8. Mitigate the impact of transportation systems	•		•	•	•		•
9. Develop a sustainable future	•	•				•	•
10. Enhance the visitor experience and create a welcoming and accessible environment	•	•	•	•	•	•	•

3. Planning Framework

CHOREOGRAPHING THE APPROACH

A typical visit to the Jefferson National Expansion Memorial now revolves as much around the parking facility at the northern edge of the site as around the experience of the Gateway Arch. Visitors typically traverse the boundary of the site in their car, emerging only once they have traveled far into the interior of the landscape. For many, the experience of the Memorial grounds is limited to the walk between their car and the Arch's north leg. From an urban planning perspective, the parking garage is one of the most potent elements of the Memorial site.

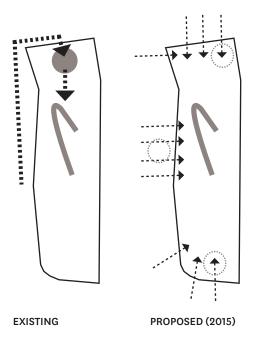
Maximum efficiency of automotive entrance and egress has erased all possibility of engagement with compelling pedestrian experiences in the urban landscape. The success of the Arch grounds' revitalization depends substantially on solving this problem. Even the most innovatively redesigned interface between the city and the Arch grounds will fail if visitors continue to bypass it entirely in their cars.

It is unrealistic to expect that within five years the Memorial could become primarily a pedestrian destination. Given that reality, our proposal instead harnesses the power of parking, and spreads it over the entire edge of the site, creating permeable thresholds and activity bridges to the north, south, and west of the Arch grounds. We propose replacing the single Memorial garage with three smaller underground facilities spaced evenly around the border of the site, infusing all three edges of the Arch grounds with the energy and activity that is currently concentrated in the north. In addition, our design calls for making better use of the abundant supply of public parking within a ten-minute walk of the site.

The redistributed parking will accomplish several important things. It will weave city and Memorial grounds together, since it positions visitors on the

threshold between them when they emerge from any of the three garages. The proposed garages will be covered by new actively programmed entry landscapes that have additional value as neighborhood parks. In 2015, with the increased usage of nearby street and public garage parking, the average walk to the Arch will be no lengthier, but it will be a walk through the downtown core, with more to see and do along the way. More visitors will approach the Memorial along the Saarinen vista, allowing them to appreciate the Arch as a gateway, rather than obliquely. Our proposal reconceptualizes parking as a medium that positions visitors in a precise choreography between city and the Memorial.

Successful city connections give people two inseparable things: ways to traverse urban obstacles and reasons to want to. Our parking strategy—which includes physical parking structures and pedestrian connections combined with vibrant new attractions and destinations at the Memorial's edge—is what allows our proposal to provide both. A reimagined and invigorated Memorial edge is just the first step in the process of weaving St. Louis's waterfront districts back into the city's more active urban core. But it is a crucial first step. Once that connection is made, the three gateway districts—Laclede's Landing, Chouteau's Landing, and the Gateway Mall-will become thresholds themselves, between the Memorial and the neighborhoods one step further removed. These preliminary steps are crucial to creating the kind of steady, sustainable growth that will reinforce St. Louis's status as a preeminent American city.

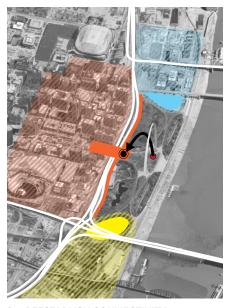




1. EXISTING CONDITIONS



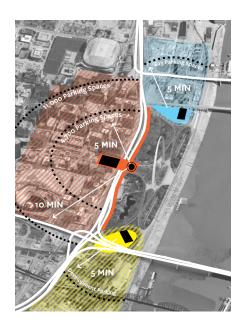
2. IDENTIFY GATEWAY DISTRICTS



3. REESTABLISH CONNECTIVITY BETWEEN GATEWAY DISTRICTS, THE MEMORIAL, AND THE RIVER



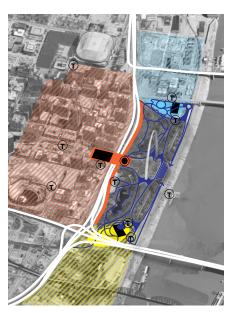
4. REDISTRIBUTE DEDICATED PARKING



5. MAXIMIZE USE OF EXISTING PARKING SUPPLY



6. IMPLEMENT REMOTE TICKETING



7. CREATE A NETWORK OF DESTINATIONS AND CONNECTIONS

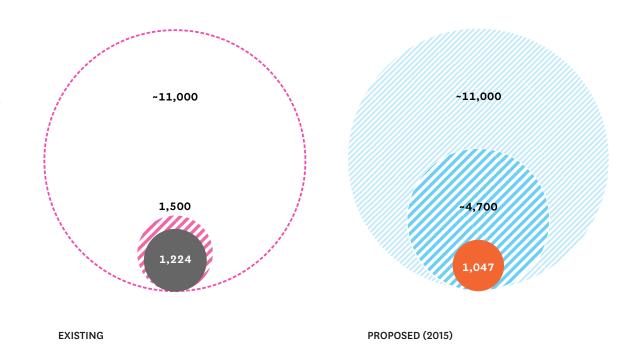


8. ANCHOR NEW DEVELOPMENT AND INVESTMENT

PLANNING FRAMEWORK

PARKING STRATEGY

Our proposal removes the Memorial garage and the overflow levee parking, replacing them with three smaller facilities evenly distributed around the edges of the site. In conjunction, strategic traffic engineering and wayfinding measures will distribute some Archbound and through traffic into the downtown grid, encouraging use of the abundant supply of public parking downtown.



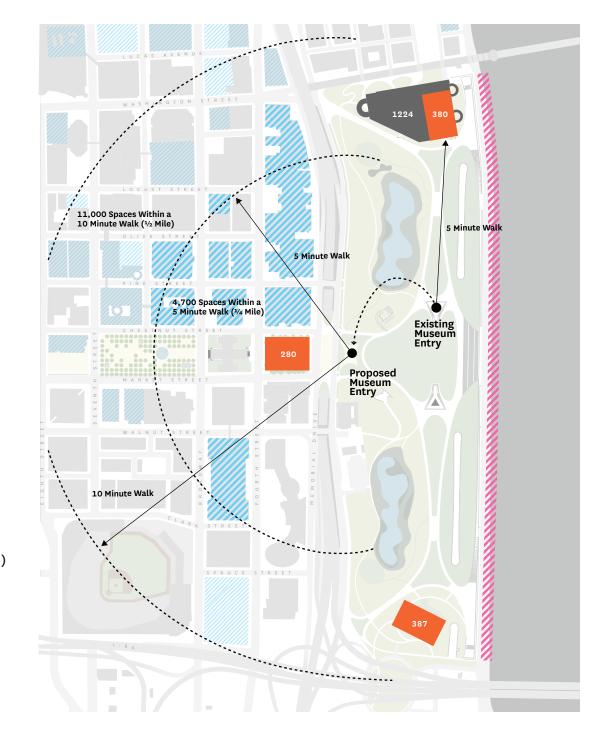
Existing Dedicated Garage
Overflow Levee Parking
Underutilized Adjacent Parking

Proposed Dedicated Garages

Downtown Parking (5 Min. Walk)

Downtown Parking (10 Min. Walk)

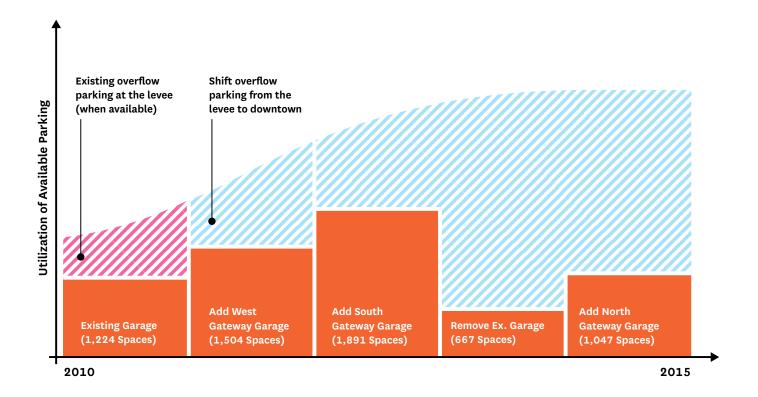
PARKING STRATEGY





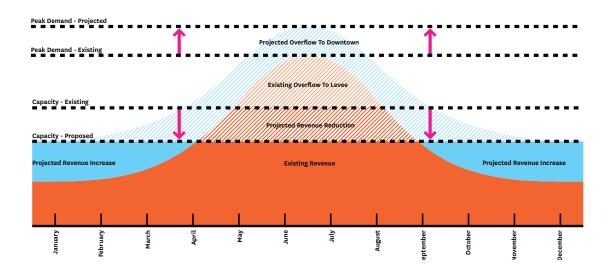
PLANNING FRAMEWORK 35

PHASED PARKING IMPLEMENTATION



EXPANDED PARKING REVENUE

By maximizing the year-round use of the dedicated Memorial parking facilities, the National Park Service can reduce the overall capacity of its garages while retaining or even increasing its parking-generated revenue. In peak seasons, visitors will park in the existing city garages, giving downtown St. Louis new pedestrian activity—and the shopping and dining that come with it.

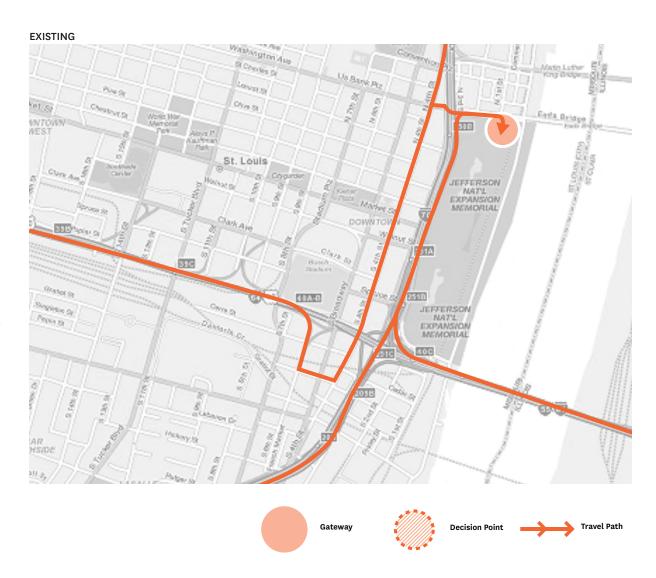


PLANNING FRAMEWORK 37

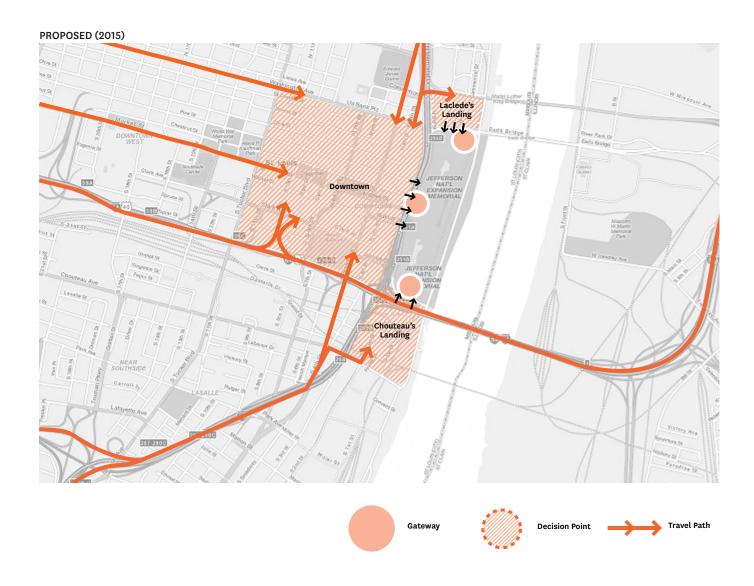
WAYFINDING CURRENT APPROACHES

These new parking facilities anchor three new gathering spaces—the North, South, and West Gateways—that in turn serve as focal points for the surrounding neighborhoods. Programmed to be civicand neighborhood-scale amenities as well as regional attractions, these gateways will allow the Memorial to turn outward and engage with the city, and also fundamentally reorient the surrounding city districts toward the Arch grounds.

The three gathering spaces will also serve as the core destinations in a new wayfinding program, which will direct visitors arriving by car or by foot toward one of the three gateway districts instead of to a single on-site garage. This will distribute Memorial arrivals evenly around the site rather than cluster them to the north and will bring an influx of civic and economic activity to Laclede's Landing, Chouteau's Landing, and the downtown core.

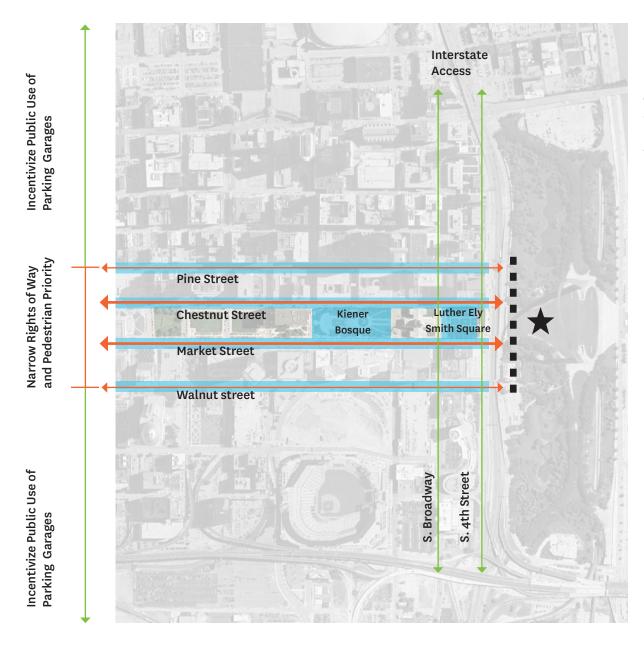


WAYFINDING PROPOSED APPROACHES



PLANNING FRAMEWORK 39

THE CEREMONIAL APPROACH



The new wayfinding strategy will also reduce traffic in the three-block stretch between Walnut Street and Pine Street. This corridor, along the iconic Saarinen vista, will be an unofficial pedestrian zone, with narrower streets and a greener streetscape.

REMOTE TICKETING

EXISTING ARRIVAL SEQUENCE

Arrive → Security → Ticketing → 2-Hour Wait → Arch





Remote ticketing facilities will be installed in each gateway district as well as at key points around downtown St. Louis, freeing visitors to wander through the downtown and the Memorial grounds before their trip to the top of the Arch, instead of being limited to waiting on the security line (and visiting the Museum of Westward Expansion).



PROPOSED ARRIVAL SEQUENCE

Arrive → Ticketing → Free Time → Security → Arch





PLANNING FRAMEWORK 41

4. Historic Landscape & Waterfront

Historic Landscape





USING ECOLOGY TO ENRICH THE LANDSCAPE EXPERIENCE

The various iterations of Eero Saarinen and Dan Kiley's Memorial landscape design between 1947 and 1964 show open plazas, waterways, recreational facilities, and networks of pedestrian trails. These overlapping and interconnected elements were intended to create an intricate diversity of program, microclimate, and landscape types. Expanses of meadow punctuated by trees, formal pathways cut through the landscape, and vistas framed by vegetation and topography created a choreographed procession into the heart of the Memorial grounds. However, as the original Saarinen-Kiley landscape was adapted by the National Park Service over almost twenty years, the landscape, because of budget limitations, became increasingly monofocal, and the complexity of what Kiley called the "forest cathedral"—a soaring landscape defined by the interplay between the formal and the natural—was lost.

As it stands today, the Memorial reflects Saarinen and Kiley's ideas with varying degrees of success. The bald cypress circles and the monoculture allées that give the site its basic structure are present, but poor soil conditions have severely stunted tree growth on the site, and the substitution of rosehill ash trees for Kiley's intended tulip poplars has left the landscape catastrophically susceptible to the imminent arrival of the emerald ash borer. Though the berms that run along Memorial Drive were significantly exaggerated in order to buffer noise coming from Interstate 70, the site's basic topographical form is sound. But the Memorial's omnipresent lawn is sterile, demands a high-maintenance regime of chemical fertilizers and

pesticides, and has led to erosion and widespread algal bloom in the reflecting ponds. And the lack of secondary walkways and paths makes the majority of the landscape highly inaccessible and generally unwelcoming—as built, it reads as a landscape designed to be seen but not touched or enjoyed.

Our proposal for the historic landscape starts with a ground-up strategy to ensure the sustained health of the Saarinen-Kiley landscape and to express elements of the original design that were lost or warped. It adopts a new approach to the hydrology of the reflecting ponds: subtle adjustments to the site's topography slow down runoff from the adjacent slopes, and stormwater collected from the surrounding neighborhoods is used to irrigate the landscape and prevent algal bloom. Building on that framework, our design includes nutrient-rich, properly draining soils and an organic maintenance regime, underwriting a richer planting palette that creates a rippling pattern of lawn, meadow, and shrub woodland around the reflecting ponds.

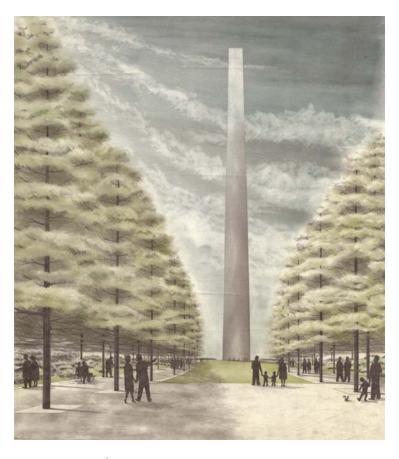
The more diverse planting system will prevent erosion, create a new dimension of volumetric interest on the site, and realize Kiley's original desire to recreate in microcosm the archetypal landscapes of the American West. The plan also has the ability to flexibly evolve in response to changing circumstances and climate—if an area of meadow is languishing, for instance, it can be mowed down to lawn while another area of the site is allowed to grow out.

Additional trees further enclose the quiet, grassy landscape rooms created by Kiley's bald cypress circles. A new network of ADA-compliant paths carefully navigates the steep topography of the site, inviting Memorial visitors into the interior of the landscape, as Kiley intended. A secondary system of mown paths cuts through the meadow, creating a more immersive landscape experience.

These fine-grained interventions all have the same underlying goal—to transform the Arch's static frame into a living, functioning system that serves an interpretive purpose and enriches the experience of the site. Our proposal preserves the Kiley landscape by faithfully rebuilding it on a new foundation of sustainable landscape-making that will ensure its health for generations. In our proposal, the Arch grounds are a living laboratory, a testament to the Memorial's new expanded focus on sustainability and constructed urban ecology—used by students from the proposed Gateway Urban Ecology Center and explained to visitors through a new program of educational signage. Ultimately, and as Kiley intended, the landscape will be a foil, a coherent organic frame against which the Arch—both as a feat of engineering and as a symbol—is best appreciated.

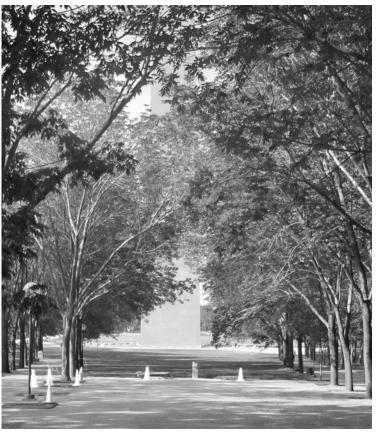


FORMAL CORE



TULIP POPLAR ALLÉE RENDERING (OFFICE OF DAN KILEY, 1962)

This concept drawing by Dan Kiley shows how his triple allées of tulip poplars were intended to echo the verticality of the Arch along the north-south axis, framing the monument without obscuring it.



EXISTING WHITE ASH ALLÉE, (2010)

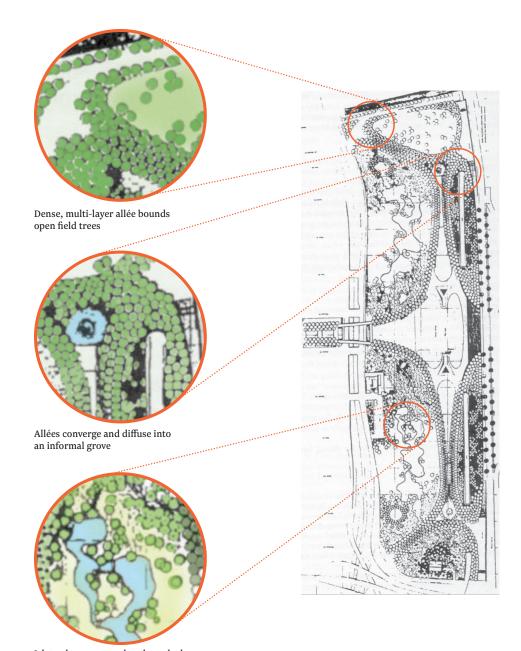
This site photo shows the existing allée of rosehill ashes, which define the volume of the space in a very different way. The trees' small size and low canopy also indicate the extent to which poor soil conditions have stunted their growth.



A COMPLEX LANDSCAPE THRESHOLD

SITE PLAN, 1964

The unique vertical growth habit of Tulip Poplars afforded Kiley the opportunity to vary subtly planting density so as to frame informal spaces, devolve the formal into informal, and diffuse vegetation across ecotones.



Islet enhances convoluted pond edge

PROPOSED (2015)





INFORMAL FRAME

The lawn monoculture and lack of visitor traffic in areas surrounding the reflecting ponds have blurred the line between formal and informal landscapes on the site. By softening and diversifying these areas, and by replanting the monoculture allées, our proposal gathers the edges of the Arch grounds into a series of active, informal spaces that, as Kiley intended, create a coherent frame around the axial gestures of the formal allées.

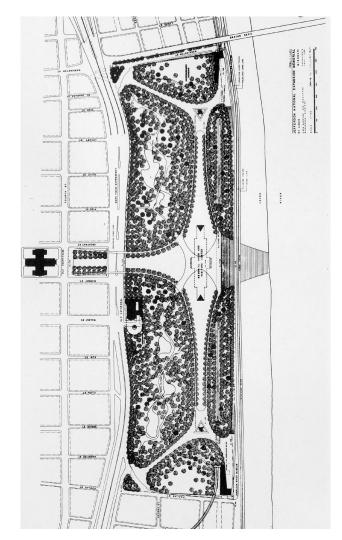


LAWN AND POND LANDSCAPE, EXISTING



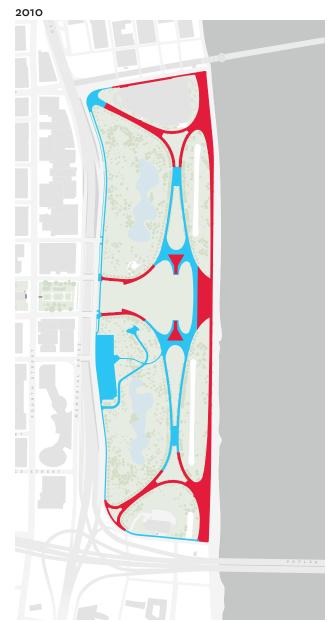
INCREASING ACCESSIBILITY

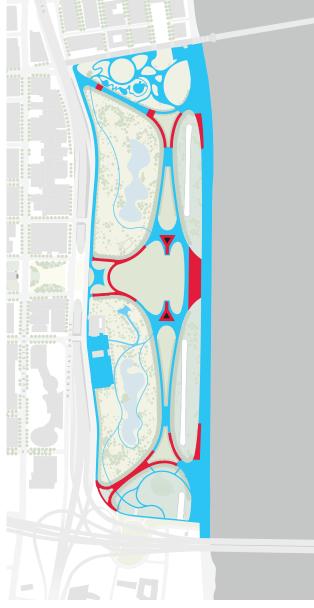
Because of its exaggerated topography of bowls and berms—and because the original landscape has not been renovated since the passage of the Americans with Disabilities Act in 1990—the Memorial landscape is fully accessible only to the surest of foot. Our proposal creates a network of new ADA-compliant routes—including elevators at each overlook—that allow families with strollers, wheelchair users, and visitors of all ages to enter the Memorial from any direction and to experience the Arch grounds in their entirety.



SITE PLAN, 1958

Connective paths interweave with the pond network under a dense canopy of informally planted trees. The formal allées are narrower than those eventually constructed, and water features terminate the high point allée junctions.



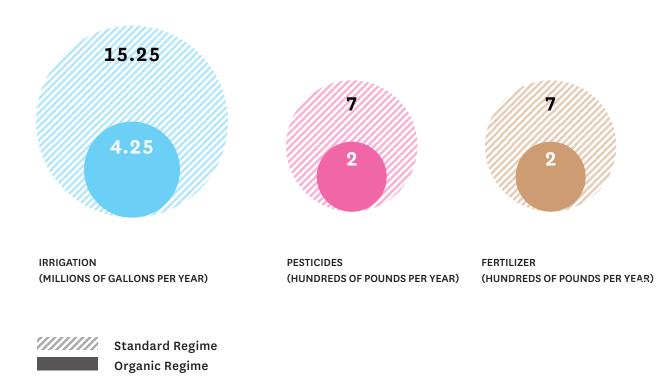


2015

ADA-Compliant
Accessible Walkways
Inaccessible Walkways

REDUCING MAINTENANCE IMPACT

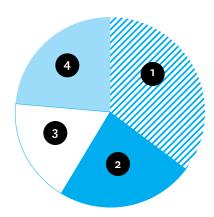
By implementing an organic maintenance regime that minimizes the use of pesticides, herbicides, fungicides, and chemical fertilizers (as MVVA has done on many recent projects), the Memorial's Grounds Maintenance staff could reduce its environmental impact by more than sixty percent compared to a standard maintenance program for a landscape of the Memorial's size.





HARVESTING WATER

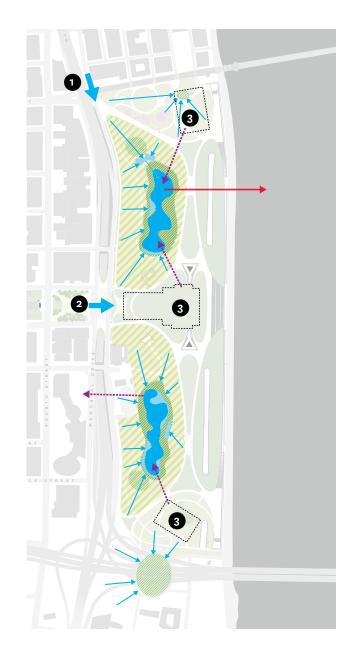
Stormwater on the Arch grounds currently does more harm than good—an inadequate drainage system leaves standing water on footpaths and causes erosion as water runs down the grassy hillsides to the reflecting ponds. In addition, the Memorial's proximity to the river and St. Louis's position over a system of natural springs have created flooding problems in the subgrade garage and museum. Our proposal turns this water from a liability to an asset, collecting it for use as irrigation and also feeding it into the reflecting ponds, where increased circulation will help prevent algal bloom.





Laclede's Landing Storm Runoff
Gateway Mall Storm Runoff
Onsite Storm Runoff
Spring Water from Basement Sumps









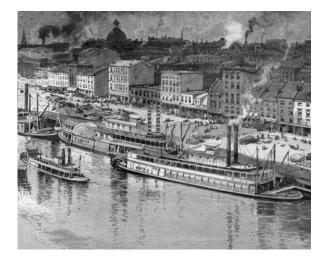
TRANSFORMING THE LEVEE

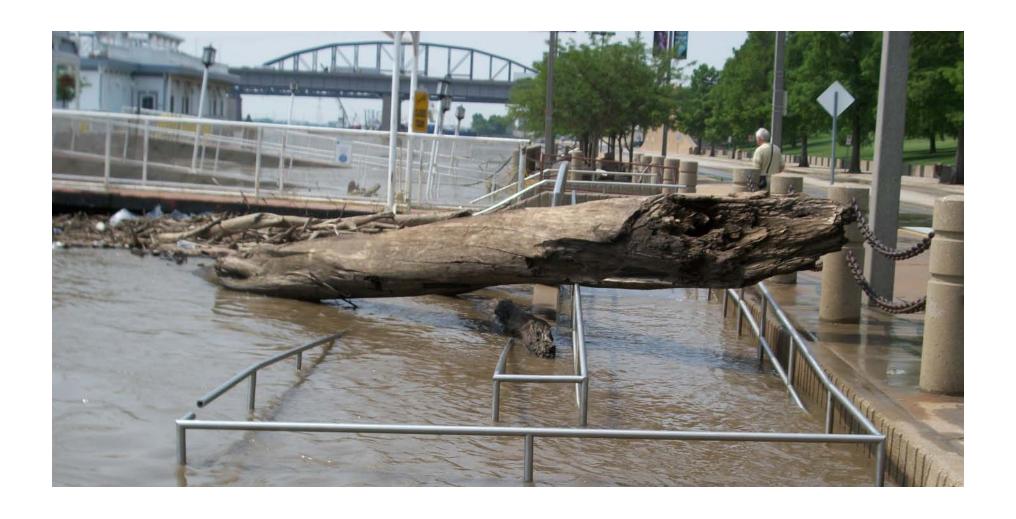
The cobblestones that make up the levee are some of the oldest artifacts in St. Louis and one of the last vestiges of the city's role as an economic capital of 19th-century America. Our proposal seeks to recapture that entrepreneurial spirit by removing the current waterfront streetscape and extending the cobble surface up to the base of the Memorial's flood walls. Instead of tailoring the design to the waterfront's intermittent automobile traffic, the new waterfront, inspired by Dutch *woonerven*, is a pedestrian thoroughfare, though it will continue to accommodate service, emergency, and event-related vehicle access.

When the river is at its normal level, the boulevard will attract tourists and locals with a wide range of temporary programming, including a regular flea and farmers' market, art installations, picnic areas, a water-taxi terminal, a carnival midway, and a temporary urban beach (in the style of Paris Plages). New allées of bald cypress trees will create pockets of shade and establish a material connection to the Arch grounds. A gentle curve in the cobble surface will widen the boulevard in front of the Grand Staircase

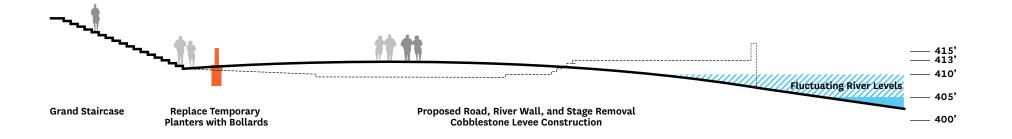
to accommodate the Celebrate St. Louis Summer Concert series and other larger events. With reinforced connections to the city through the Memorial grounds (including, for full accessibility, elevators to the overlooks at either end), the levee will be an animated hub of urban activity.

A new program of levee lighting will help extend this activity into the evening. On the upland side, floodlights embedded in the cobblestone surface will illuminate the monolithic Memorial flood wall and turn it into a canvas animated by the shadows of trees and passersby. This form will be reflected in the river, where a series of six sixty-foot River Gauges will mirror the imposing silhouettes of the flood walls, creating a sense of enclosure and redefining the boundary of the waterfront to include the fluctuating river edge. Their light, powered by photovoltaic cells and directed down onto the water, will vary in intensity depending on the water level, translating the natural ebb and flow of the river into a new experiential medium.





THE RIVER'S EDGE







INSPIRATION FOR A ROBUST NEW WATERFRONT



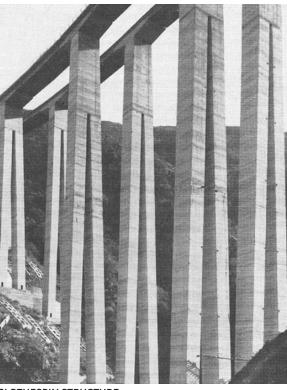
LEVEE, 1907



KING POST TRUSS



RIVERWALL, 2010



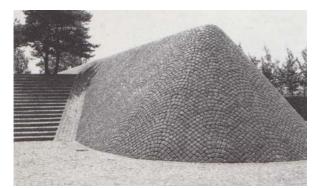
CLOTHESPIN STRUCTURE



MOORING STRUCTURE

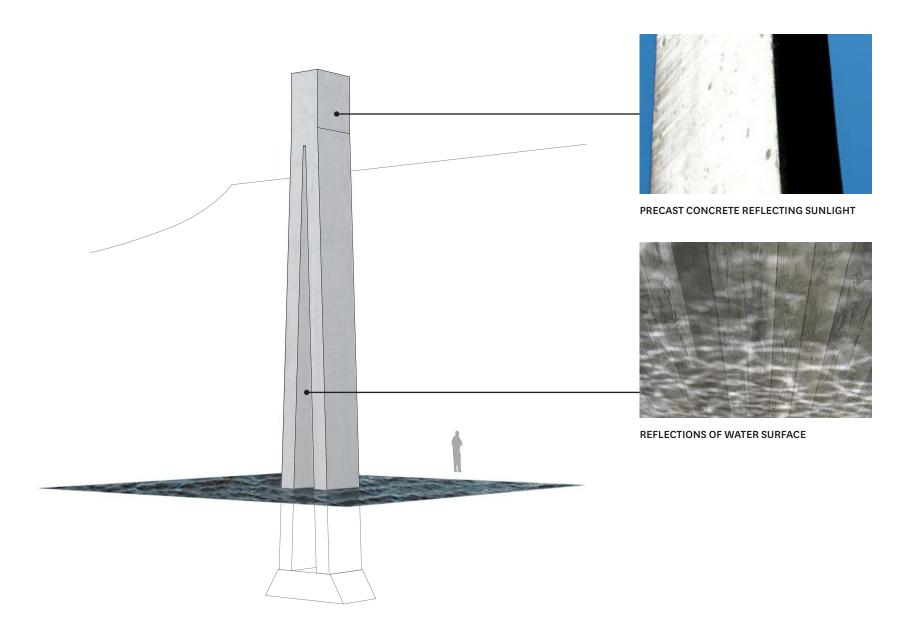


WATER HEIGHT RULER

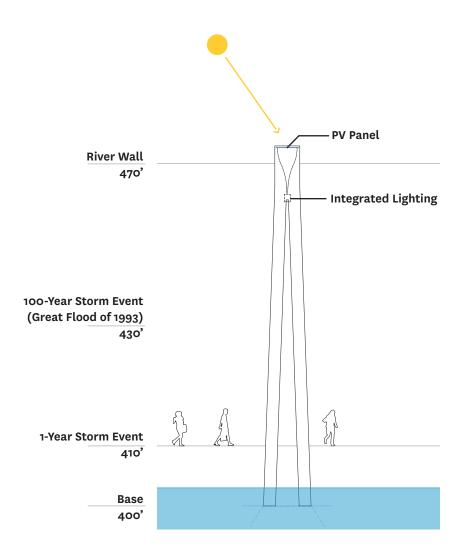


COBBLESTONE

RIVER GAUGE MATERIAL



RIVER GAUGES — RENEWABLE ENERGY

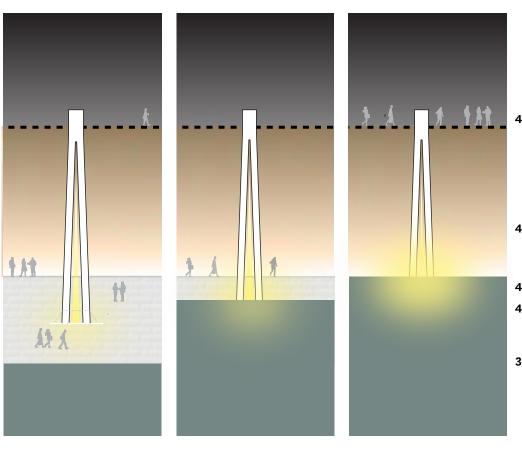




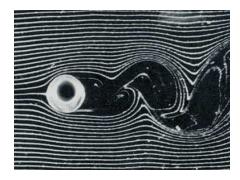


PV panels gather and store energy during the day

RIVER GAUGES — DYNAMIC LEVEE LIGHTING



470' - Top of River Wall



430' - 100-Year Storm Event (Great Flood of 1993)



71

410' - 1-Year Storm Event 400' - Base of Light Mast

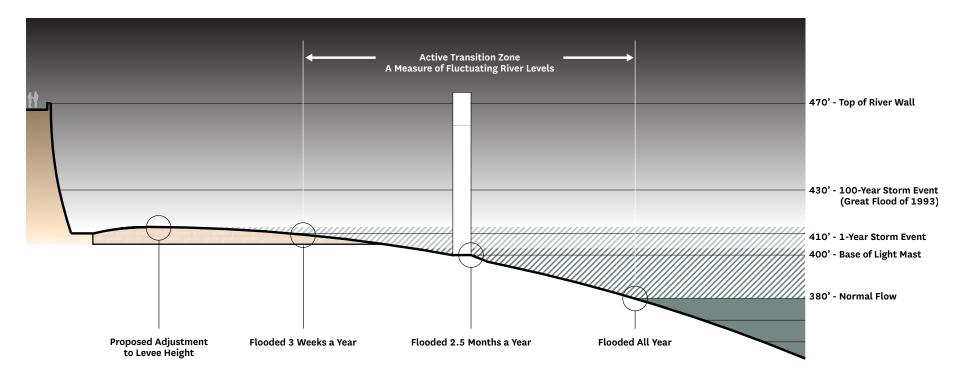
The eddies created by the feet of the light masts will create a complex surface pattern ideal for illumination.

380' - Normal Flow

As the water level rises, the light hitting the water will increase in intensity.

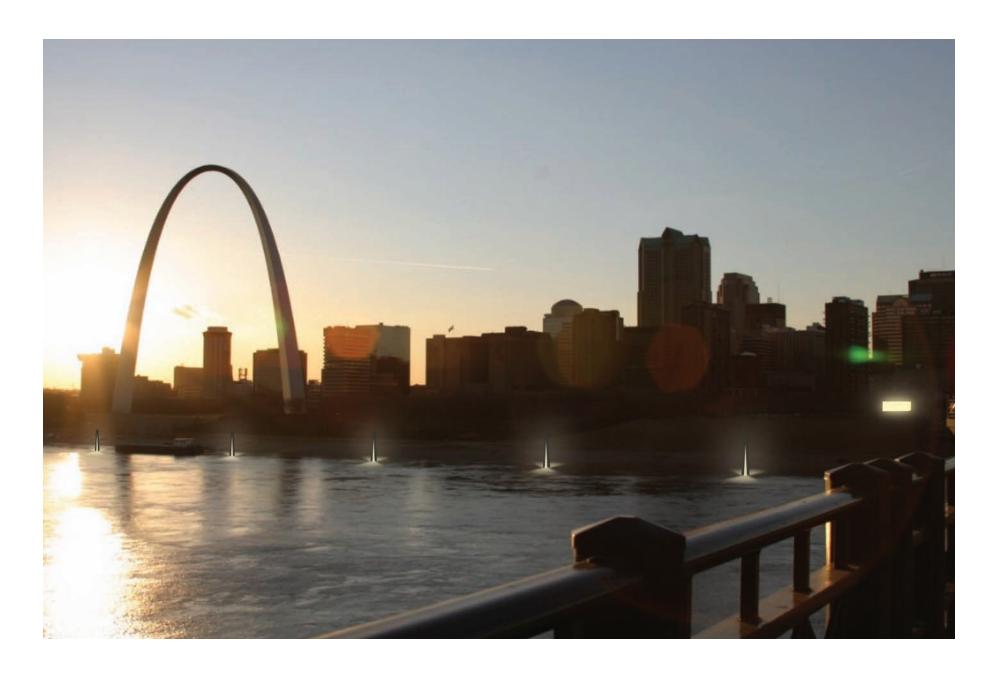
HISTORIC LANDSCAPE & WATERFRONT

RIVER GAUGES — MARKING FLOOD LEVELS



The river gauges will mark the flooding Mississippi in two ways—horizontally, by serving as a reference point against which to measure the advancing waters, and vertically, by marking the height of the water along their legs.

RIVER GAUGES — SKYLINE VIEW



HISTORIC LANDSCAPE & WATERFRONT 73

Historic Landscape & Waterfront: Technical Notes

DESIGN AND PRESERVATION APPROACH (NEPA 106)

Jefferson National Expansion Memorial (JNEM) Gateway Arch Competition 2010 Arch+Grounds+City+River

Design + Preservation Approach

How can one imagine a future Arch+City+River without revitalizing the Grounds that connect these three together? It will take more than respect for Kiley and adherence to NPS Cultural Landscape Reports for this revitalization to happen. The Gateway Arch Grounds must be managed with a more complex lens that is based on the landscape medium and landscape spatiality, one that was anticipated by former NPS cultural landscape historian Mary Hughes who managed the 1996 JNEM NPS Cultural Landscape Report:

"This case study also suggests some of the ways in which preserving landscapes is different from preserving buildings. The historic preservation field, evolving over the years out of a concern for preserving architecture and artifacts, has developed a bias towards material conservation, placing an emphasis on retaining 'historic fabric' with a lower regard for the less tangible qualities of place and space-making. By these traditional standards, the Memorial landscape is not historically significant because the materials found on the site today have only the most tenuous connections to either 'master' designer. Yet this judgment would ignore the fundamental fact that the Memorial integrates landscape and structure through a single powerful artistic vision that transcends individual details and materials by strength of its underlying spatial and symbolic qualities. If it is to encompass landscapes adequately, the historic preservation field will need to become more comfortable with notions of concept, space and other intangible but no less real qualities of the built environment as well as the dynamics of change and connection to surrounding natural systems. Landscapes, after all, are often experienced more as 'ground' (no pun intended) than as 'figure'; spatial characteristics proportion, scale, visual relationships—are the basic building blocks of landscape experience. The Memorial landscape, in which the design concept is more significant than individual material components, provides a dramatic illustration of these issues. As the daring design of the Jefferson National Expansion Memorial broke conventions in the fields of architecture, engineering and landscape architecture, so too will its preservation serve as an innovative modes for the emerging field of historic landscape preservation." (Hughes. "Dan Kiley's Site Design for the Gateway Arch" in Charles Birnbaum, Preserving Modern Landscape Architecture. Papers from the Wave Hill-National Park Service Conference (1999), p32)

Given what we know about Kiley's involvement and the key role of plants in his design vocabulary and spatial principles from the NPS Cultural Landscape Reports (1996 and 2010 revision), it is apparent that "rehabilitation" of the Gateway Arch Grounds should be directed towards the re-establishment of Kiley's concept and intentions for the Grounds. This will require translating those intentions into a management plan that is based on spatial principles, and the relationship between parts and elements. These relationships must include the ecological, as well as the cultural, historical and spatial. Our team has developed an approach that seeks to work within the Secretary of Interior's Standards and NPS

Guidelines, but interprets them so they are more suitable for the landscape medium in general, and modernist landscapes in particular.

The MVVA team will build on this more nuanced, and more landscape based, understanding of the Gateway Arch Grounds so that the center of the Arch+City+River complex is a compelling, urban landscape that has historic integrity. But the Gateway Arch Grounds need to be more than this. They also should be a healthy ecosystem that is more self-sustaining and regenerative than it is now. For this to occur, the disciplinary boundaries that exist between natural and cultural resource protection need to be examined, so that the essential conditions necessary to the health of urban trees are improved on the site. Cultural preservation cannot ignore the obvious, and serious need for improving the soil and pond ecology. Kiley design intentions and spatial principles should be overlaid with contemporary urban ecological practices, so that decisions about plant species, lawn seed mixes, and water quality in the ponds are not seen through a double lens, of the cultural or the ecological. While sustainability best practices should be considered, they cannot trump cultural landscape character, as if our generation "knows best." But neither can a concern for cultural landscape preservation be accepted as an excuse for maintaining acres of "suburban lawn" when a Kiley's conception of a meadow might allow for a mix of grasses and forbs, nor a concern for material conservation result in preserving a monoculture of trees that are threatened by a devastating insect.

This approach is much needed in the profession where landscape architects and their collaborating consultants of historians and scientists carve up landscape into elements, categories and systems, neglecting the complex, and fascinating aspect of most great landscapes—that they are simultaneously records of past human actions, small and great, and dynamic ecosystems. The Jefferson National Expansion Memorial, the Gateway Arch Grounds, can be a demonstration for the National Park Service that overcomes this separation. There are many references and resources for this work such as the Mary Hughes article quoted above. Articles such as Robert Cook's "Is Landscape Preservation an Oxymoron?" written for the 1996 conference proceedings, Balancing Natural and Cultural Issues in the Preservation of Historic Landscapes, urged landscape architects to be clear about the values that undergird one's approach to landscape change, and to recognize that all preservation is an act of interpretation. Just as an architect would be able to insert new mechanical systems into a historic building, if done sensitively, so too such a landscape architect consider how to preserve Kiley's intentions with more sustainable water systems or mowing practices.

This will require a team with deep knowledge of the landscape medium—soils, water, plants and their ecological interactions, of Kiley's modernist spatial principles and experiments with planted form, and contemporary design+preservation debates. We are that team. The lessons learned from this approach to the Gateway Arch Grounds will have application to many other sites and projects—from the National Park Services' other urban properties, such as Constitution Gardens and the National Mall, and numerous modernist landscapes commissioned by private and public clients around the United States. In brief, the rehabilitation of the Gateway Arch Grounds can be a re-imagination of the twenty-first century American landscape, one that conceptually and physically considers the site through a cultural and ecological lens. Knowing how much Dan Kiley appreciated the spiritual, emotive, and physical aspects of the landscape, we cannot help but think he would appreciate this focus on preserving his intentions, by seeing the forest as well as the trees. In doing so, we can rehabilitate the character, the spirit, the emotion, and the experience Kiley and Saarinen intended for the Gateway Arch Grounds.

Elizabeth K. Meyer, Historical Landscape Architecture consultant August 2010 Page | Elizabeth K. Meyer, Historical Landscape Architecture consultant August 2010 Page 2

Significance of this Cultural Landscape

Daniel Kiley's office was involved the St. Louis Gateway Arch Grounds planning and design for twenty years, during which time he collaborated on several other projects with architect Eero Saarinen, including the Irwin and Xenia Miller house and garden, University of Chicago, Dulles Airport as well as the Stiles and Morse Residential Colleges at Yale. At the same time, and more to the point, his firm gained a reputation for creating memorable spaces of geometrically-ordered groves and bosques with projects such as Independence Mall in Philadelphia, Lincoln Center in NYC, the Oakland Museum in the Bay Area, and Washington, D.C.'s Pennsylvania Avenue pilot block in front of the FBI Building. In these projects and many others, Kiley collaborated with the most respected architects of his generation, including SOM, Noyes, Pei, Harrison and Abramowitz, Breuer, Giurgola, Weiss, Barnes, Robertson, Rogers, and Pelli. During the time Kiley's conceptual ideas for the Gateway Arch slowly formed into a final design direction, his stature within the American architectural design community was growing; he came to be appreciated by architects as the most sought after landscape architecture collaborator in late 20th century America.

During this period from the late 1940s through the mid 1960s when Kiley worked on the Gateway Arch Grounds, Kiley's design vocabulary matured into a modernist spatial vocabulary that is recognized today as his major contribution to twentieth century landscape architecture. It is also the reason he was such a respected collaborator with his generation of architecture—they had a shared medium for integrating inside and outside, architecture and site. As he explained during a 1982 symposium at the University of Virginia, Kiley considered his primary medium as a landscape architect to be the three dimensional spaces created by plants that were neither as bounded as a built room nor as amorphous as the "open plan" in modernist architecture. Kiley was fascinated with an in-between form of landscape experience that more akin to the spatial quality of a walk through the woods:

"...the poetics of space, where space is continuous; where two-dimensional space gets broken down into a movement—dynamic movement that never ends, but extends into infinity. Movement that is ever-continuous and elusive—like a maze."

His spatial sequences were realized through the arrangement of plants and experienced through movement, especially walking. This required precision in geometric plan alignments as well as in the art of parallax—walking amidst a planted "peristyle hall" of regularly spaced trees. Kiley's spatial focus resonated with the theories and practices of mid-20th century modern architecture, but it was grounded in landscape theory and practices (see Meyer essay, "Kiley and the Spaces of Landscape Modernism" in Rainey and Treib, Dan Kiley Landscapes. The Poetics of Space) and manifest in the landscape medium, requiring a knowledge of the habits and form of plant species individually and in groupings.

How was this design interest manifest in the landscape Kiley made for the Gateway Arch Grounds? While he and Saarinen developed several schemes for the site between 1947 and 1964, each of them included a spatial sequence from the city to the memorial that was framed by a dense planting of regularly spaced trees. They imagined this landscape matrix first as a forest, and then as a forest and meadow. The urban forest resonated with Saarinen's Scandanavian heritage, as well as Kiley's long-term interest in interpreting the experience of "walking through the woods" into a designed landscape experience. The terms forest and meadow, instead of park, connoted the spatial vastness and unbounded horizon associated with America's westward expansion.

Elizabeth K. Meyer, Historical Landscape Architecture consultant

August 2010

Page 3

The final scheme they developed together was the most integrated. Saarinen described his pleasure with the result as follows:

"More and more I believe that all parts of an architectural composition must be parts of the same form world.....You see, before it was put together with many different well-related things, but of many different form worlds. Now it's going to be all one." Eero Saarinen (INEM CLR, 2010 revision, p. 91)

The memorial effect of that sequence was contingent on the interplay of the streamlined, catenary arch-like shaped of the paths in the site plan, the gently ascending and descending ground plane, the specific plan arrangement and spacing of tall tree trunks, and the species of trees. Beyond the regularly spaced rows of trees defining the broad walks, the remainder of the memorial grounds was conceived of a matrix of groves of smaller, mixed species trees and meadows that contrasted spatially with the approaches. Collectively, plan arrangement, sectional changes, form and materials defined the character of this designed landscape, as with others.

Current conditions and management approach

Despite the best efforts of many NPS site managers and professional staff, the Gateway Arch Grounds—the essential matrix (or "fabric" or "mooring", other terms used in the CLRs) for the Saarinen Arch--are suffering from a management approach that has not protected the landscape's primary character-defining aspect, the spatial experience of a five minute memorial promenade through a majestic peristyle of tree trunks and under a canopy that mediates between the urban scale of the City and the sublime scale of the Arch and the River.

Focusing on each in separation, as it required by NPS Guidelines for the Treatment of Cultural Landscapes, confuses the means and the ends. This process of analyzing a cultural landscape as a series of separate material elements or characteristics, but not re-integrating them into a set of design tactics or spatial principles often reduces works of landscape architecture to the combination of plants, ground, water and structures. The way that these materials interweave to construct space and experience is not clearly articulated. The essence of the design is lost.

We know from the documentation undertaken in the NPS Cultural Landscape Reports (1996, 2010 revision) and the General Management Plan (2009) that Kiley choreographed the three ceremonial approaches to the Saarinen-designed arch with the careful placement of multiple rows of tall native plants, *Liriodendron tulipifera*, thirty feet on center in the long dimension. The trees in each row were staggered by fifteen feet, creating a, elongated "quincunx," a variation on the typical evenly spaced bosque. The spacing between rows, approximately 20 feet on center, widened as one walked towards the memorial, opening up towards the scale of the Arch. Kiley described this tree that can grow up to 100 feet tall even in urban environments as appropriately scaled to the 630 feet of the Arch itself. The spatial experience of the grounds, the interaction of geometry, plant species and perambulation, is the essence of Kiley's contribution to this project. Individual aspects of his project—its plan, its circulation, its topographic manipulation—were tools for the construction of experience.

Elizabeth K. Meyer, Historical Landscape Architecture consultant

August 2010

Page 4

DESIGN AND PRESERVATION APPROACH (NEPA 106)

Critique and response

"No generation has talked so much about 'outdoor space' as ours and none done so little about it." (Eero Saarinen, Architectural Record, November 1960)

The NPS Cultural Landscape Reports for the Gateway Arch Grounds go a long way towards correcting the narrow architectural focus of the original 1970s National Register nomination by documenting Kiley's design contributions, and the role of the site design, to the project. While it is clear that Saarinen was a major force in setting the design direction of the project, Kiley's work was much more than a green background setting for the Arch. Conceived with the same "form-language," it was developed in a very different medium, one whose properties are very different from stainless steel and concrete. Kiley's urban forest and meadows were conceived as a means to order the large scale of the site, to provide contrast between the ceremonial approaches and the secondary meadows and lower forest canopy, and to provide a sense of vastness evoking the possibilities of an ever-expanding American frontier

These comprehensive Cultural Landscape Reports also document the difference between Kiley's intentions and conceptual design, and the implementation of those intentions over the past forty years by NPS staff and consultants. We understand that Kiley's concept remains intact, but recognize that there have been many changes that are not supportive of that concept. We are interested the opportunity that the Arch+City+River competition affords to differentiate Kiley's intentions from the landscape that exists within the Gateway Arch Grounds today, and to imagine the process of strategic, targeted physical design alternations and changes to maintenance procedures as a means to both regenerate the site's ecological health and return to Kiley's intentions for the Grounds.

In reviewing the Cultural Landscape Reports, it is apparent that the 1970s-80s NPS design development of Kiley's design concept does not account for the interplay of plants, space, and experience. Under Jon Ronscavage, the plant substitutions made during the 1960s design development of the NPS diluted Kiley's intended spatial experience. For instance, when the specified tulip poplar tree was criticized by members of the public, pin oak and ash, among other species, were considered. A pin oak that will grow to sixty to seventy feet tall and a 'Rosehill' ash tree that will grow to thirty-five to fifty feet tall will not create the same effect as a tulip poplar that will grow to one-hundred feet tall when planted in a row or bosque. From the NPS Cultural Landscape Report, it is not clear if these changes were politically expedient and the result of lobbying on the part of individuals as well as the regional nursery trade, or well-intended but inappropriate. Regardless, the allees are not significantly different in scale from the surrounding groves today. While they are impressive, they do not form a high, lofty processional corridor and threshold to the Arch that contrasts dramatically with its surrounding meadow and grove matrix or fabric. The NPS determination to maintain the ash monoculture in the face of mounting plant ecological research about the impact of the emerald ash borer on the health of this genus and species further complicates this problem. Over 150 ash are currently missing from the allees.

Gateway Arch Grounds today are managed like a machine with interchangeable parts. One plant dies, another is substituted. Since 1981 when the designed landscape was ostensibly complete, over 50% of the plant species have been changed. An assessment of the replacements (CLR 1996), reveals little similarity in form between the new plants and those replaced. The Gateway Arch Grounds have not been managed as a living landscape creating a designed spatial experience that contributes to the Memorial's intention. As such, The Gateway Arch Grounds appear more spatially homogeneous than

they should be because of the lack of appreciation of the scalar and formal differences that exist between plant species, and that should exist between the plants within the approach and those in the surrounding groves. This focus on the specific materials and elements, such as lawn, trees, pavement, and furnishings, in the landscape has been to the detriment of the spatial characteristics of the Gateway Grounds. It has also contributed to the declining ecological health of the site. Despite the pervasive brilliant green veneer that drapes its constructed topography, even during a dry summer, the Gateway Arch Grounds matrix of groves and trees drains across over fertilized mown lawns into putrid ponds that cannot overcome the excessive nitrogen in their system.

The 1996 Cultural Landscape Report section on Spatial organization focuses on the site plan, as if that was the sole bearer of spatial experience. The role of specific plant species in establishing the character of the allees and providing strong contrast or juxtaposition between the allees and the grove was lost in this analysis. That earlier report focused on individual landscape design elements and systems, but failed to synthesize how these elements are distilled into a set of design tactics and spatial principles. This bias is an outgrowth of the guidelines of the NPS Secretary of Interior Standards for the Treatment of Historic Properties and Cultural Landscapes that separate design characteristics out into elements and categories, and that privilege materials over space.

We were pleased to read the revisions to the section on Spatial Organization in the 2010 Cultural Landscape Report. In its more sophisticated analysis of the Gateway Arch Grounds, the 2010 Cultural Landscape Report defines the Memorial landscape's spatiality in terms that extend beyond the site plan organization to include spatial compression and expansion, orchestrated movement, proportion and scale (CLR 2010, Section 3.3). Hughes' 1999 comments appear to have been incorporated into this important revision. A major symposium on Kiley's work occurred at the Harvard Graduate School of Design in 1999, and several scholarly books and articles published over the last fifteen years have enriched, and deepened, our understanding of Kiley's work and significance (Amidon, Rainey and Treib, Meyer, Hilderbrand). Fortunately, the Cultural Landscape Report 2010 revision takes into consideration these more complex understandings of landscape spatiality. These new perspectives must be brought to bear when considering a landscape rehabilitation approach to the Gateway Arch Grounds.

When Elizabeth Meyer presented the lecture, "Preservation in the Age of Ecology: Post World War II Built Landscapes" to the National Park Service-Wave Hill conference in 1995, she spoke of the need for a more spatially focused understanding of modernist landscapes, and one that considered the impact of changing ecological theories on the conservation and rehabilitation of cultural landscapes. These issues are central to ensuring the integrity of the Gateway Arch Grounds, and many National Park Service properties. Through the process of working through them on this significant modernist landscape on the Mississippi River waterfront in St. Louis, the MVVA team in collaboration with the National Park Service and its partners can reinvigorate and regenerate the Gateway Arch Grounds as well as the standards for "rehabilitating" cultural landscapes. That is a mission worthy of a Memorial to the history of westward expansion, and ultimately, American's complex and contradictory relationship to our vast continent.

Elizabeth K. Meyer, Historical Landscape Architecture consultant August 2010 Page 5 Elizabeth K. Meyer, Historical Landscape Architecture consultant August 2010 Page 6

Miscellaneous Notes from Reading, Site visits

What is significant about the JNEM? What is significant about the Kiley design?

National Register significance based on association with:

Criteria A: Thomas lefferson, History of US territorial expansion

Critieria C: Saarinen and Kiley long term collaboration, 19 (first of several, including the Miller House and Garden)

Original National Register nomination:

Period of significance, 1950-1974? (NRHP website, 08-02-10)

does not credit or mention Kiley

But NPS addressed this omission in the 1996 Cultural Landscape Report that asserted the significance of Kiley's involvement and his collaboration with Saarinen. The Bellavia/Bleam CLR also found that the plant varieties and location were key to the design; this contradicted Gary Easton's 1994 "Statement for Management" (See B/B, p 6)

",,, both the architecture and landscape together form a work of art, reflecting the work of two masters, that contribute to the significance of this property." (B/B, p 11)

DK design, according to the CLR

Themes: "architecture addressing the total environment" (4)

"forested, park-like setting" (4)

evolved from forest to "more open landscape with continuous use of parabolic line" (6)

occurs in 1961, post ES death; KR works with DK to create "forest and meadow" concept

"Spatial continuity, was DK's 1957 design intent (53)

Key Characteristics ("Contributing to its significance" in NPS parlance)

Spatial Organization

1957 DK Spatial continuity, tulip poplars spaced closely together (B/B 53)

 $\!$ 1966 DK planting plan—scale of tulip poplars was related to scale of the Arch; taller than other plantings

Topography

Rose Hill Ash along approach, 280 of them; 82 died due to soil compaction and insufficient drainage (B/B, p 107-108)

B/B says there are 985 ash, 71 of which are in poor condition

[I do not agree with this, and believe this point will need to be explicitly addressed)

Elizabeth K. Meyer, Historical Landscape Architecture consultant

August 2010

Page 7

* <u>Critique of CLR.</u> There is not formal analysis of the Gateway Arch grounds design principles in this document. It describes the grounds in terms of elements and systems, but not how they come together. You cannot replace Tulip poplars with ash trees and have the same spatial organization.

Non-contributing Characteristics

Railroad plantings

Smaller details such as the Tree grates and railroad tunnel plantings

Changes from DK to NPS (post 1979)

Evergreen substitution: hemlock to pine because soils were not acidic enough (B/B 85)

Eliminated gingko

Tulip poplar substitution, 1971: Fraxinus Americana "Rosehill" (B/B, 87)

[Need to compare profile of these two trees to explain how they do not have the same habit]

Tulip poplar substitution, debate:

concerns about monoculture; design team argued for DK monoculture in approach; design team suggested Quercus palustris (pin oak) when Liriodendron criticized (B/B, 89)

also considered Tilia Americana and Tilia Cordata (linden)

Then local reporter criticized use of Pin oak because the soil was too alkaline (see above?!!!)

Tests revealed soil was 7.5 pH; too alkaline for Pin oak

Fraxinus was selected at this point

Tally: by end of CDs. 50% DK's plant species were retained (10 or 11 out of 21); ten new species added (B/B, 91)

[CONTRADICTION: "The composition of the plant material in relationship to the hardscape features such as the walks, lakes, Arch and overlook was reasonably retained." (B/B, 91)

By 1996, an additional eleven more large tree species than in 1981; five more flowering tree, and two more groundcover/shrub..

My understanding of design approach

Self-contained environment, with emphatic edges that separate the JNEM from the city through different approaches on each side

Constructed ground plane, with undulating surface, connotes rolling prairie

Modernist space—intermediate spatiality, between building mass and open landscape

Not open landscape Third condition

Not addressed in the 1996 CLR

Elizabeth K. Meyer, Historical Landscape Architecture consultant

August 2010

Page 8

DESIGN AND PRESERVATION APPROACH (NEPA 106)

Lines, Volumes of promenade plantings lining approach: rhythmic, spacing, meter

Six rows, two in path, two on edge between path and lawn, two in lawn (same as Constitution Gardens, DC)

Staggered rows, tightly spaced tall species (tulip poplar)

Fields—groves of plantings: forest trees, such as white oak, red oak, hackberry, gingko, with smaller flowering trees at edges, such as redbud and dogwood

Two meadows with central lagoons

Lagoons—complex, edge with intimate spaces between

Design Approach (versus Preservation Approach) Redefining "Rehabilitation" as a Strategy of Landscape Additions

http://www.nps.gov/hps/hli/landscape_guidelines/index.htm
Spatial organization receives short shrift compared to material conservation

REVIEW OF MVVA work to date in STL

1. Work along edges to connect JNEM to the city—compatible with DK design

as the north and south boundaries were intended to include service

west boundary, on axis, new entrance—is a change to a major feature, and will need to be addressed directly. Why does it not impact the integrity of the ES/DK design? Or does it impact the design, but is necessary in order to create a more welcoming, efficient visitor experience?

General issue: in historic preservation of buildings, the façade is often the place where preservation is most strongly adhered to/interior changes often ok, in a historic district for instance; in urban landscape preservation, often the reverse is true. The boundary is often the place where there has been considerable change in adjacent contexts. In order for the urban landscape to be viable as a public space, changes on the edge often need to occur (see Bryant Park success versus Independence Mall and Skyline Drive failures).

MVVA should state a position about the reworking of the edge that will retain character of JNEM experience but better connect the memorial to the city, etc

- 2. Reworking the service yards for restaurants, etc—great idea
- 3. Do not set the project up as a choice between preservation and sustainability. This ploy is being used by clients and their designers to destroy historic buildings and landscapes and to build new LEED structures, etc. Instead, frame the issues as integrated landscape systems (versus elements), and concentrate on terms related to the landscape medium (pond and meadow do not have to be like those at [NEM).
- 4. Arch+City+River—where the heck is the Gateway Arch Grounds? Arch+Grounds+City+River

Elizabeth K. Meyer, Historical Landscape Architecture consultant

August 2010

Page 9

Historical Timeline (from CLR, 1996) [my commentary]

1935 National Historic Site, and clearing of 40 acre site except for two buildings

1947 competition, 91 acres

1951 Luther Ely Smith Square, east of Courthouse, developed by St Louis Parks Dept landscape architects

1957 DK spatial continuity [post Miller garden]

1961 ES dies in September; change from forest concept to forest and meadow concept

1962- Oct 65 Arch construction

1964 Final Landscape CDs done by DK (includes lagoons, despite CW's objections earlier)

1966 DK planting plan complete [after CD?] see B/B, 83 drawing "approved plan" (GDP desribes as DD drawings)

1966-1978 NPS construction documents

1969 John Ronscavage, NPS San Francisco Team Captain for Arch grounds landscape construction; he substituted Pinus nigra (Austrian pine) and Pinus strobus (White pine) for Tsuga Canadensis as soil was not acidic enough

1970 Bid package plants criticized by nurserymen

1972-74 Planting installed

1973 NPS construction drawings given to HBA to complete; NPS reviewed the drawings through 1978

1974 Walks and lighting constructed

1974 Overlooks constructed

1975-7 Monumental river stair constructed (HBA changed riser tread relationship)

1977 Monumental river stair crumbling; rebuilt

1978-81 Completion of a major part of the planting

1980 Bald cypress circles planted

1983 RR cut Bulgarian ivy replaced with grass (NPS not maintaining/weeding)

1986 Parking garage complete

1986 Plant replacements (dogwood not doing well; replaced with snowdrift crabapples)

1993 Mississippi River flood decimated plants around RR cuts; replaced with wet tolerant species like river birch, swamp white oak, black gum, heritage birch, sweetbay magnolia

1995 J. Patterson notes poor soil drainage, and impact on ash [same situation and detail at Constitution Gardens, by Henry Arnold in 1976—former Kiley employee!]

1996 NPS Cultural Landscape Report completed; notes ash are at extent of mature urban life—15 years? Pathetic!

2009 NPS General Management Plan

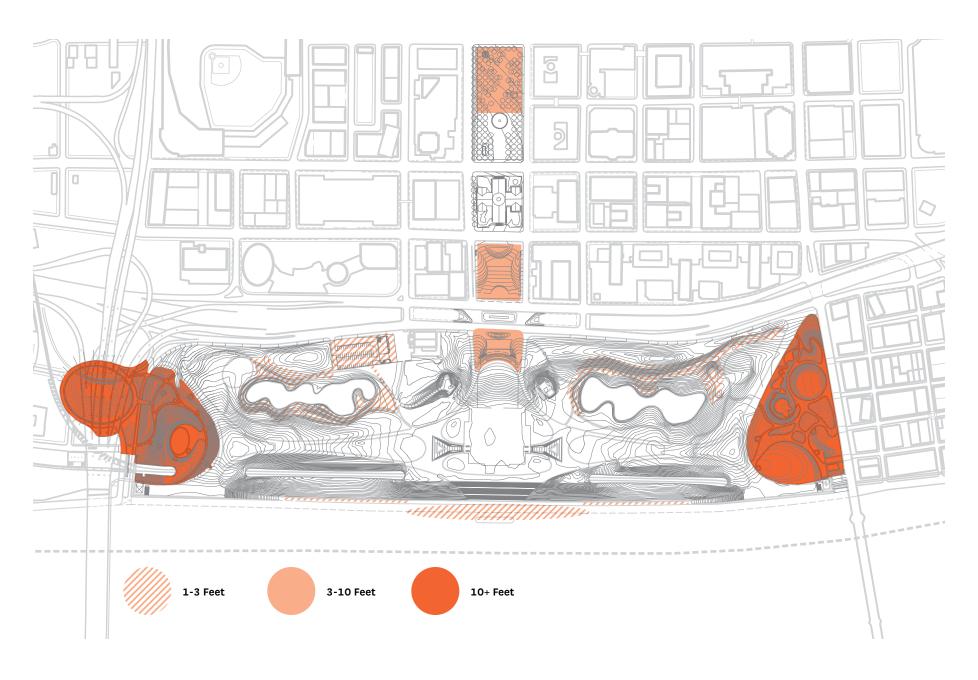
2010 JNEM Cultural Landscape Plan, revision (AECOM)

Elizabeth K. Meyer, Historical Landscape Architecture consultant

August 2010

Page 10

PROPOSED CHANGES TO HISTORIC LANDSCAPE TOPOGRAPHY



MEMORIAL GROUNDS SOIL MEMO

Memo from John Swallow: St. Louis Arch Trip

I observed many soil/water/plant issues on my trip. Prior to going and subsequently, I have reviewed selected reference materials and I blend those ingredients together in this memo. Michael outlined pertinent issues of concern to include in my trip and those topics are included below in bold.

Soils

Soils throughout the Memorial were placed and originated from varying sources: urban demolition fills, alluvial soils from river deposits, and borrow soils from Lambert Field Airport. From geotechnical boring data, urban rubble fill soils range from 6 to 35 feet in depth, although demolition rubble was reportedly found in tree pits during replanting. From a test pit that was open during my visit in the open turf area nearly under the Arch, I observed 8 inches clay silt loam on top of clay loam down to 3 feet, the depth of the pit. The soils were strongly influenced by loess deposits.

Historic and recent soil tests indicate the site soils are alkaline arising from free calcium carbonate. This fact was recognized at a late point during the original design work and influenced the final plant list. One of the arguments for the Rosehill Ash was its tolerance for higher pHs.

These heavy clay soils are killers during construction and would have created a world of trouble during construction activities to produce horticulturally viable soil conditions. I expect many areas would have been and still are suffering from compacted soil layers impeding drainage, aeration and root penetration.

As replanting occurs along the major paths, there should be a more comprehensive, integrated approach to planting soil, drainage and path. Use of Sand-Based Structural Soil under paving, underdrainage and ample designed-soil resource volumes will be essential. Also this approach will provide the opportunity to control pH for tree choices.

Restoration of existing trees must involve location-specific drainage solutions and aeration. Fortunately, there are many opportunities to exploit topography changes to accomplish both remedial and new underdrainage solutions.

Trees

Conditions of the trees vary a lot. For those in decline or dead I frequently noted more than one contributing stressor including crossing/strangling roots, planting depth, competitive overcrowding, borers, physical damage, tree grate interference, and what are undoubtedly limiting soil and drainage conditions.

Three major tree species stood out as being fully adapted and vigorous: baldcypress,

river birch, and swamp white oak. Honey locusts are nonstarters and then there are the ashes

The workhorse of the Park is the Rosehill Ash, a male clone of white ash, selected from seedlings by Evert Asjes (owner of Rosehill Gardens, Kansas City) and patented in 1966 (#2678). Note that the original plantings were executed in 1971-72 – not a lot of time from the 1960's to evaluate a clone's growth characteristics and potential. It was heavily marketed as a replacement for the American elm – broad wide angle branching, tolerant of poor alkaline soil, borer resistant, and seedless. Unfortunately there were also several fatal flaws: borer vulnerability, shade intolerance and lower and wider growth habit than typical for the species. It is this latter aspect that presents a rather stunted appearance

The Emerald Ash Borer is a recent and probably the most fatal of the flaws. From Asia and first recognized in Michigan in 1982, it has spread throughout the Midwest. Rapid spreading is facilitated by the fact that it has no predators in North America. The Memorial has worked on control strategies that are described in two publications: "Memorial's Ash Management Workgroup Recommendations" and "Draft Emerald Ash Borer Management Plan (2009)." I was not able to access either to determine the viability of the Plan. Perhaps, in essence, it is a deliberate replacement with another species over time. Hopefully. The chronology of Kiley's plant list wars reveals that there was a mountain of very strong feeling against the tulip poplar and for the Rosehill Ash. I wonder how much of that still lives?

Turf

There has been a long history of massive re-sodding efforts after large events, especially when those events coincided with extended rainstorms. Reportedly, poorly drained surficial soils contributed to large-scale damage.

Sod that I observed was all cut from sod farms with high clay soils similar to site soils. Rooting depths were not great (3-5"). Redesign of high use turf areas should consider alternative sod farm soils underdrainage and a sandy soil texture, probably with reinforcement.

It appears that when seeding occurs now, a range of seed blends are used for different settings, unlike earlier when one blend was everywhere (Arch Grounds Seed Mix – 70% bluegrass, 15% rye, 15% creeping red). Blends now are of differing mixtures.

Ponds

There are a lot of opportunities to rethink the ponds and a lot of need to solve some failures

The obvious algae problem arises from excess nutrients transported to the ponds. Transport is by three means:

- 1. Dissolved in storm water flowing directly into the ponds overland.
- Adsorbed on soil particles eroded by storm water that flows directly into the ponds.
- 3. Dissolved in storm water piped to the ponds from large areas of the site.

The water depth is 27" by design, reportedly, so as to not require a perimeter protection fence. They are concrete-lined and walled, drained periodically, and cleaned. Far from a naturally functioning water body. Too much of the fertilizer applied on those lush turf areas flows downhill and by pipe into the ponds. Without any aquatic plants and subsequence nutrient uptake and aeration, they soon become algal stews.

There are three critical parts to the multi-dimensioned remedy:

- 1. Collect storm water before entering the ponds and treat it biologically thru "rain gardens" with green matter harvesting which is then composted for reuse. Nutrient absorption on soils with subsequent mineralization and plant uptake greatly reduces nutrient concentrations. The goal would be to infuse the nutrient-rich runoff into the deeper soils, then collect it for recharge to the ponds. Deduction in turf fertilization rates and different types would be wonderful.
- Create a functioning self-sustaining ecosystem within the ponds. Presently they are nothing more than stagnant pools, devoid of any biological balance.
- 3. Prevent all soil erosion into ponds and provide failsafe backup protection.

An important issue that turned up in my research is there has been and probably still is, an issue about the water being deeper than 27 inches for safety reasons. This is true? Any go-arounds?

Street Narrowing

I would expect the usual challenges to establishing new streetscape plantings along the streets leading from the site westward. Under the roadbed will be engineered fill and under that will be combinations of highly compacted clayey subsoils and urban rubble fill. During a reconstruction process that all can be fixed.

I believe an exciting prospect of a street narrowing design would be the chance to bring creative and beneficial efforts to storm water management thru "rain gardens" with subsequent recapture for reuse. There's good grade change that would make this easy.

In addition to the aesthetic benefits to the city are long-term cost saving in storm water treatment if the city has a CSO. Also there would be far less nutrient discharge to surface water. This would be an important ecological benefit.

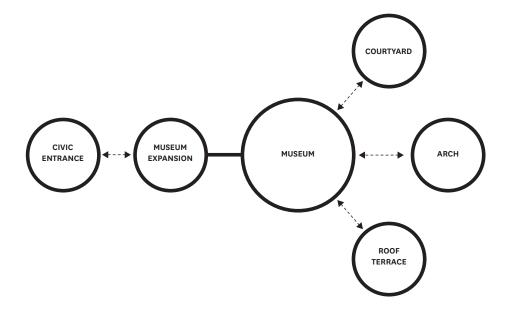
5. Museum Expansion

A DISEMBODIED ARCHITECTURE

As a historic cultural landscape, the Arch grounds cannot easily accommodate a new large-scale program of institutional architecture, and should not be forced to. Nevertheless, enlarging the Jefferson National Expansion Memorial's museum facilities should be a central ambition of this project. Providing a visitor experiences that are on par with that of other world-class museums is an important way to attract new, and more importantly, repeat visitors.

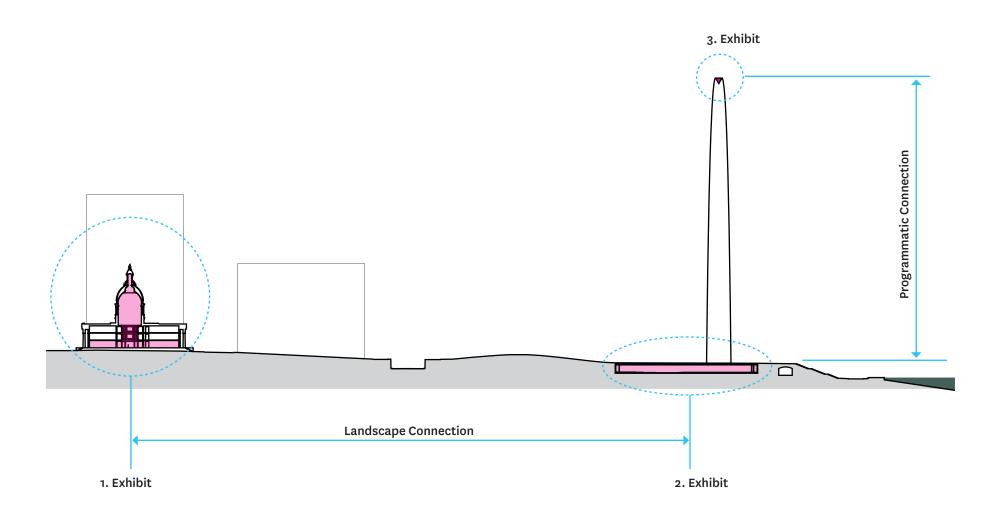
The existing conceptual organization of the Memorial's interpretive facilities provides a guide to creating a new first-rate museum space without detracting from the character-defining features of its landscape context. Physically, the Museum of Westward Expansion presents a unique and compelling condition: it consists of two distinct spaces, separated by 630 feet, the experiences of which are totally divorced from one another because of the intervening Arch tram ride. The Museum is made up of a formless underground core and a discrete, iconic above-ground projection.

This, then, is the template for creating subtle interventions within the Memorial's existing architectural vernacular. We propose three new above-ground architectural extrusions: a civic entrance, a roof terrace, and a courtyard, with minimal structural continuity among them. From within, these new spaces will be experienced as fully formed and programmatically coherent spaces, but they will be intrude only minimally on the exterior experience of the Memorial grounds. Instead of creating a singular new architectural presence, or even a series of structures that distract from the centrality of the landscape, our strategy of letting the Memorial's architecture be unimposingly disembodied lets the landscape itself be the connective force that makes several disparate architectural moments into a coherent whole.

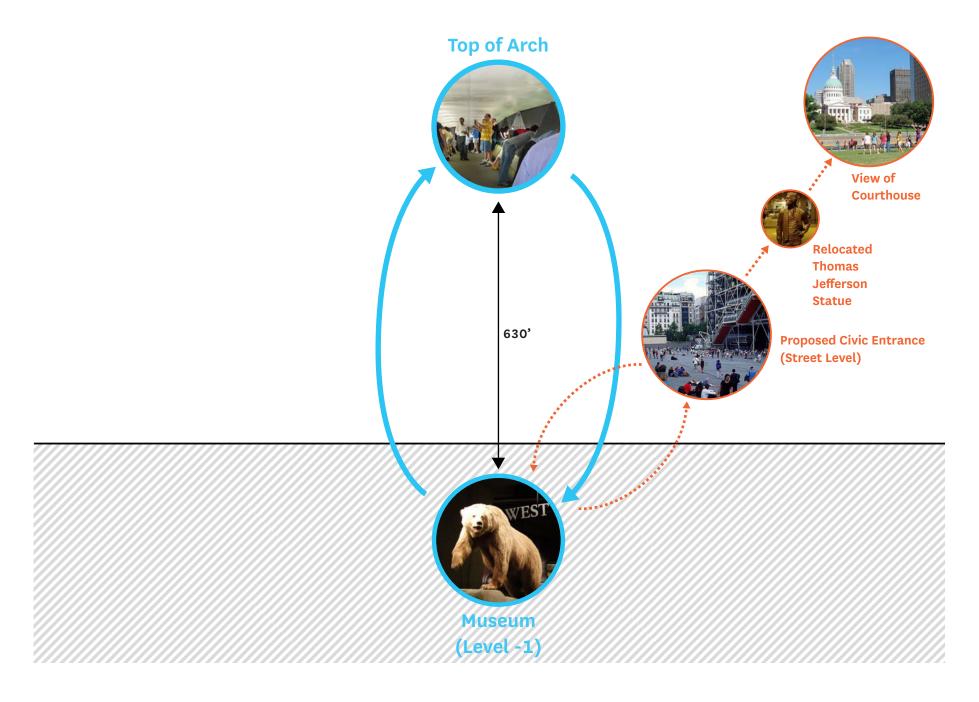




CONNECTING DISCRETE MUSEUM EXPERIENCES



CIVIC ENTRANCE



CREATING A NEW CIVIC ADDRESS

The new museum entry is envisioned as a discreet incision into the landscape, establishing a presence for the museum in direct proximity to the Old Courthouse. The new entry, a strategic and surgical intervention, provides an intimate connection to the landscape and gives new symbolic weight to the statue of Thomas Jefferson, which now looks out into downtown St. Louis and to the American West beyond.

The entrance is defined by the ethereal presence of a subtly arched glass canopy, delicately supported by a series of radial stainless steel columns and cantilevered beams. As one enters under the canopy, the Arch remains visible through the glass, maintaining its gravitational force throughout the site.

As one traverses the transparent threshold into the new museum (after passing quickly through strategically positioned security and ticketing facilities that do not diminish the sense of openness and welcoming), the visitor has two distinct options.



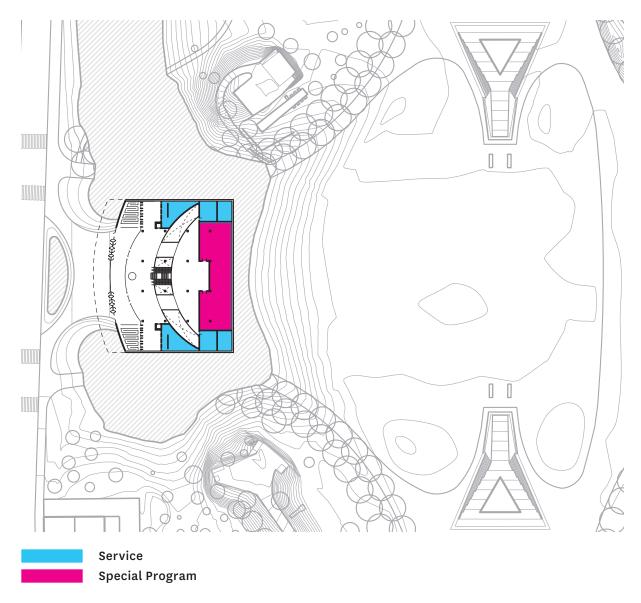


MUSEUM EXPANSION STREET LEVEL

Directly ahead, across two bridges crossing the open atrium space, is a special exhibitions area. This area is programmed for changing exhibits that would attract both the one-time visitor and a repeat audience of local residents. The subject matter of these exhibits might touch on immediate ecological issues, larger land-use issues, and other such subjects directly related the memorial's mission of exploring the expansion to the West, interpreted in a contemporary context.

The visitor is also directed to descend, via either stairs or an escalator, into the expanded exhibition environment. A new bookstore, café, and exhibition space provide an active and focused series of programming organized linearly along a timeline and culminating in the existing theaters and Arch tram entries.

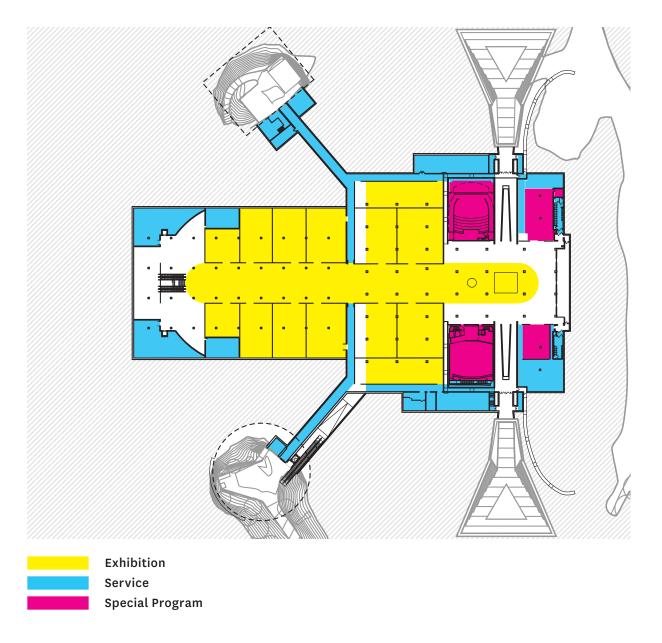
By using carefully positioned skylights, the new exhibition environment provides a clear sense of intuitive way-finding and orientation. It transitions from a darkened environment at the museum core to one that is more closely linked to the landscape and environment above at the new museum entrance.

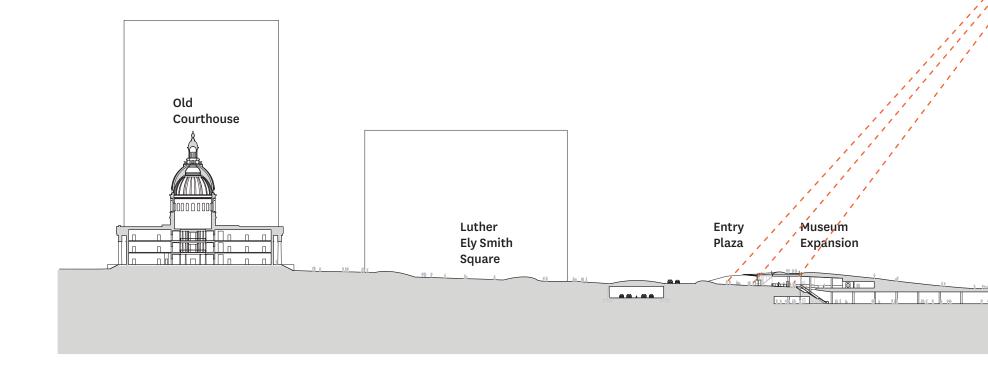


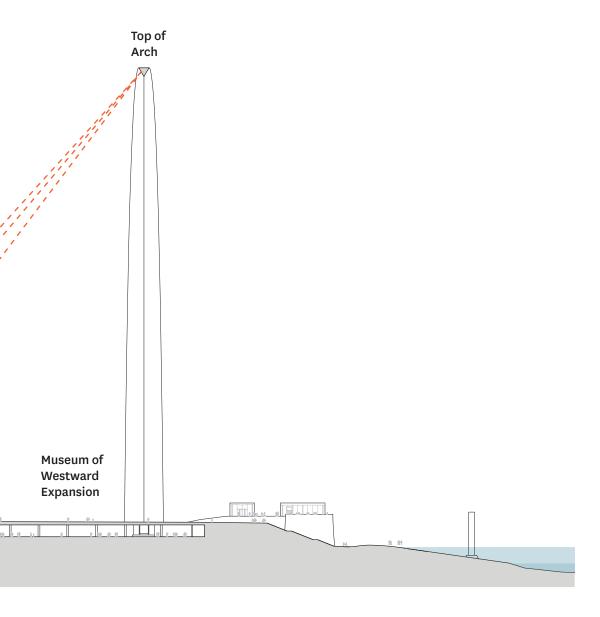
MUSEUM EXPANSION LEVEL -1

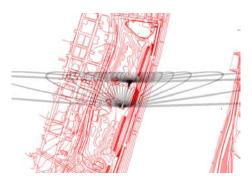
In addition to providing daylight as a way to reduce electric lighting demand, we are proposing to use new foundation excavations as an opportunity to deploy geothermal systems that will reduce heating and cooling costs for the entire complex. Significant savings—both financial and environmental—could be achieved by replacing the existing mechanical systems with more efficient units that take advantage of the heat-exchange potential of geothermal technology.

In the evening, due to the use of carefully developed glass structures and skylights, the new museum entry will have a soft glow that spills out into the entry plaza, welcoming evening visitors and announcing this newly active exhibition environment. It will provide a clearly active urban presence at night, bringing the park into a dialogue with the city at all hours of the day.

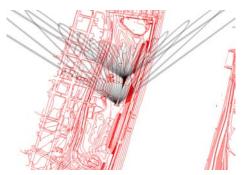




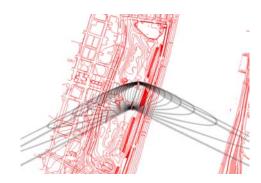




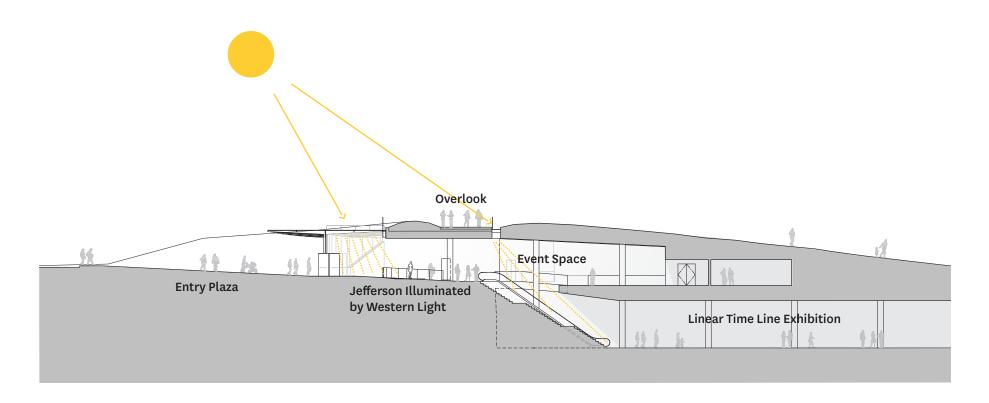
ARCH PRESENCE ON SITE: SHADOWS CAST THROUGHOUT DAY ON SOLAR EQUINOX



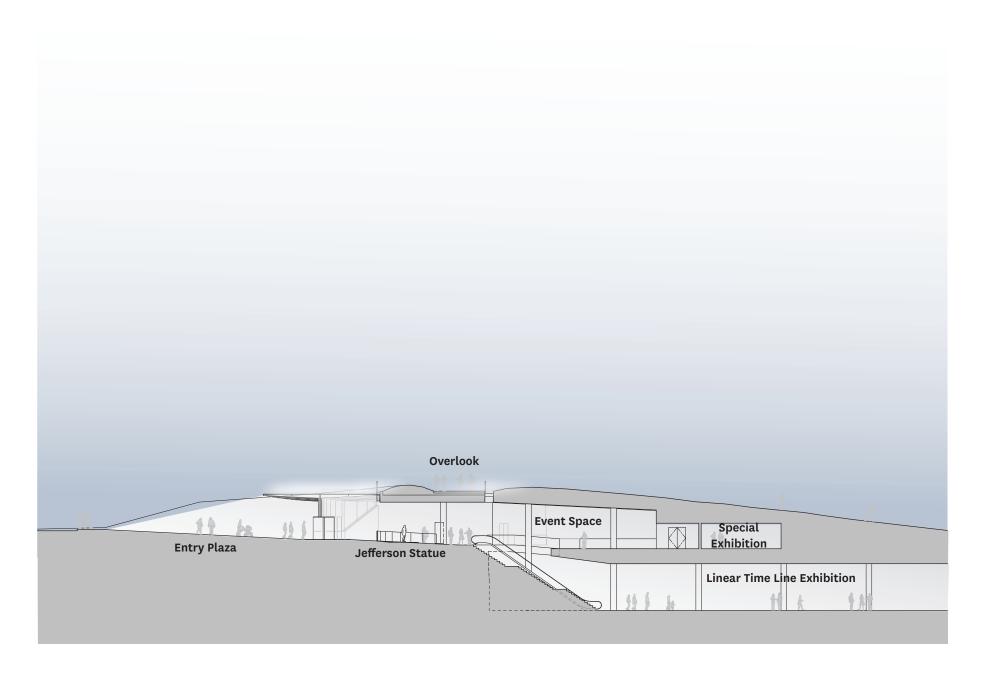
SHADOWS CAST THROUGHOUT DAY ON DECEMBER 21ST



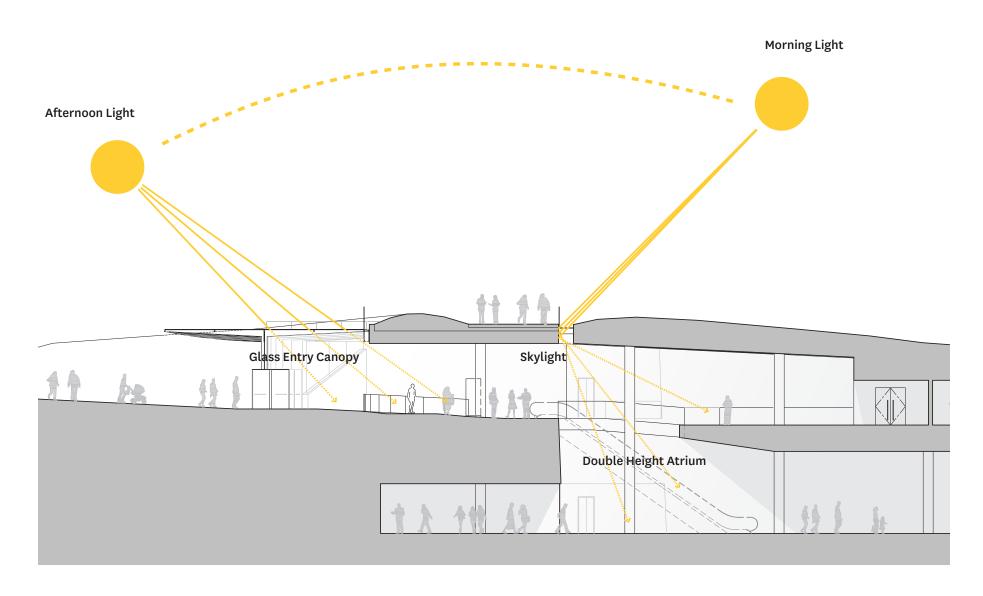
SHADOWS CAST THROUGHOUT DAY ON JUNE 21ST



MUSEUM EXPANSION ENTRY DIAGRAM, NIGHT

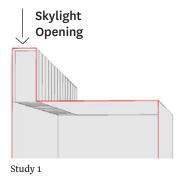


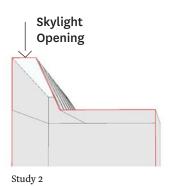
MUSEUM EXPANSION DAYLIGHT STRATEGY

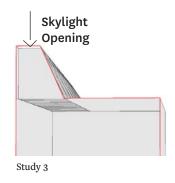


DAYLIGHT STUDIES: AMOUNT OF LIGHT TRANSMITTED THROUGH SKYLIGHT

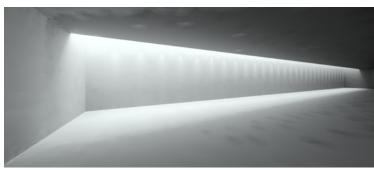
DIAGRAMS OF SKYLIGHT SHAPE STUDIES



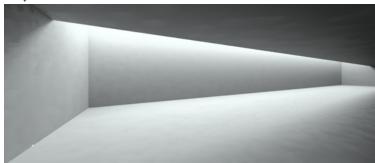




DAYLIGHT ILLUMINATION LEVEL WITHIN SPACE BELOW



Study 1



Study 2



Study 3

REORGANIZATION OF THE MEMORIAL EXHIBITS

The design for the expansion and renovation of the Museum of Westward Expansion will be transformative. By extending the "activity bridge" through the Museum itself and up to the Top of the Arch, the new Museum will strengthen the physical connections between the city and the Arch, and employ a dynamic plan to interpret the several stories associated with St. Louis as the gateway to national expansion. Visitor activities are organized along a linear spine with security, visitor services, and amenities including a special exhibition gallery at the entry level, followed by a narrative exhibition that leads to the Gateway Arch on the lower level, and culminating in a visit to the top. As the visitor moves along the exhibit, focus galleries offer a deeper interpretation of stories presented in the narrative and views of the Arch link the actual icon to those stories through carefully placed views.

The new Museum will:

- create a more coherent and memorable visitor experience by integrating the museum spaces and their content with the views from the top of the Arch.
- create an appropriate venue for changing exhibitions and programs to attract local and repeat visitors, and to increase visibility.
- create more efficient systems for ticketing, security checks, and queuing to improve the visitor experience.

VISITOR SERVICES

In order to avoid the long queues caused by inefficient ticketing and security checks, the design incorporates state-of-the-art electronic ticket vending and pick-up. Visitors will be able to purchase timed tickets for special exhibitions, events, and visits to the top of the Arch on-line and at ticket machines placed at key

locations throughout the park. An information desk and staffed ticket counter will also be located in the new museum entrance lobby. Appropriate space for security machines and staff, and queuing will produce smoother checks and improved circulation. Once visitors are inside, the long galleries will help absorb queuing for the Arch experience.

EXHIBITIONS

The design recognizes that some visitors may have limited time or are primarily interested in visiting the Top of the Arch, while others have more time and interest in a deeper exploration of the history and meaning of our nation's expansion west. A two-track concept for the permanent exhibits will accommodate both kinds of visits and create many ways to experience them.

A linear "Narrative Gallery" will run the length of the museum from its entrance to the Arch. The exhibit will provide a kind of summary of the key themes associated with westward expansion, St. Louis as the gateway, and the iconic Arch. It will afford the possibility of a manageable tour that covers all of these themes. As visitors move through this exhibit, the actual Arch becomes a living part of it by means of a series of dynamic views. The trip through this exhibit merges seamlessly with the trip up the Arch and provides a coherent and meaningful context for viewing St. Louis, the river, and the West.

Adjacent and parallel to the "Narrative Gallery" will be "Focus Galleries" that will afford the option of examining aspects of the main narrative in more detail. The effect is not to make some galleries seem more important. The aim is for Museum visitors to be able to experience multiple stories on single and successive visits.

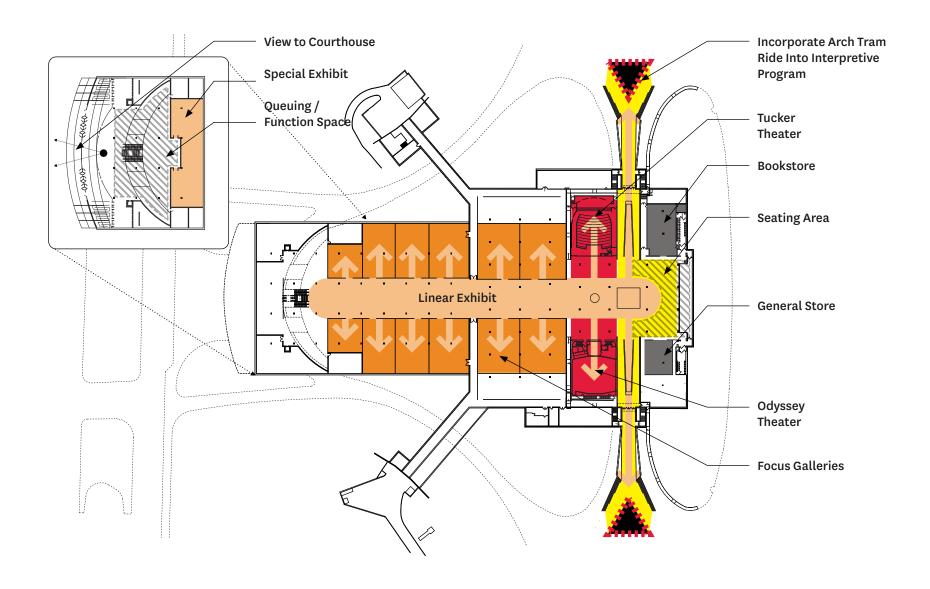
SPECIAL EXHIBITION GALLERY

Changing exhibits provide an opportunity to attract local visitors and encourage multiple visits by offering something new and different. It is also a means to form partnerships with sister institutions locally, regionally, and nationally to both catalyze increased vitality in the St. Louis region and elevate the Museum to national prominence.

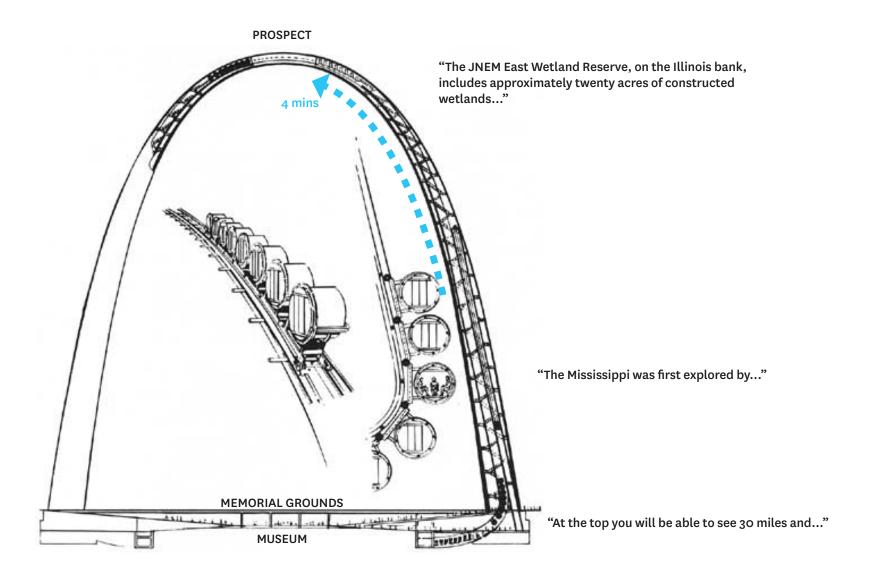
By building a gallery to Smithsonian standards for environmental controls, lighting, and security, the Museum could collaborate on thematic loan shows with institutions like the St. Louis Art Museum, the Thomas Jefferson Memorial Foundation at Monticello, and the Smithsonian. These exhibits could be ticketed, providing a source of revenue to support programming.

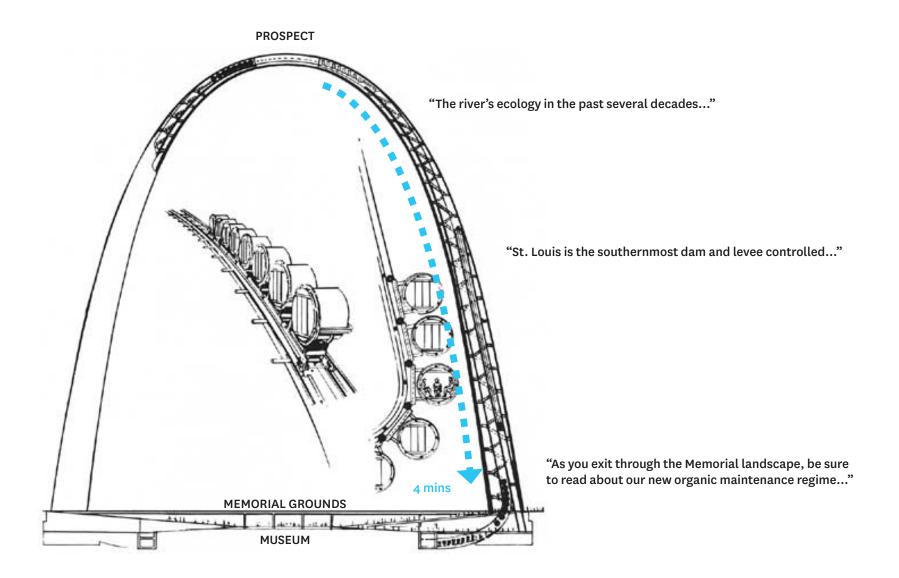
Taken together, these features of the new Museum of Westward Expansion help create a more welcoming and accessible environment, enhance the visitor experience, and promote multiple and extended visits by an expanded audience.

MUSEUM EXPANSION PROGRAM ALLOTMENT

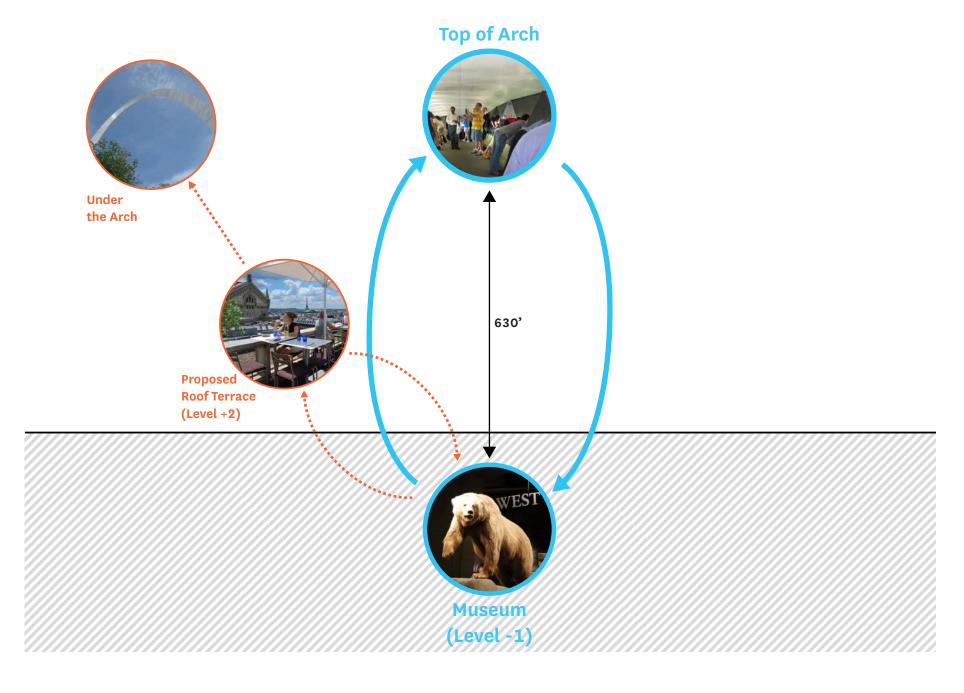


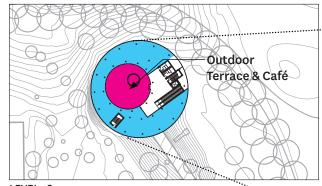
INCORPORATING THE ARCH INTO THE INTERPRETIVE PROGRAM



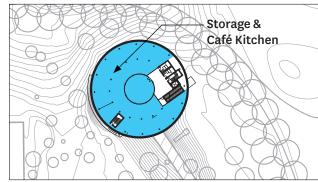


ROOF TERRACE

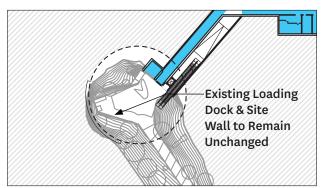




LEVEL +2



LEVEL +1



LEVEL -1



VIEW FROM CAFÉ



MUSEUM EXPANSION 107

MUSEUM EXTENSION



VIEW FROM SERVICE DRIVE Existing Conditions



VIEW FROM SERVICE DRIVE
Proposed Extension

ROOF TERRACE



MEMORIAL VIEWSHED

When viewed from the memorial, the museum extension is shrouded by the tree canopy.



VIEW PRECEDENT

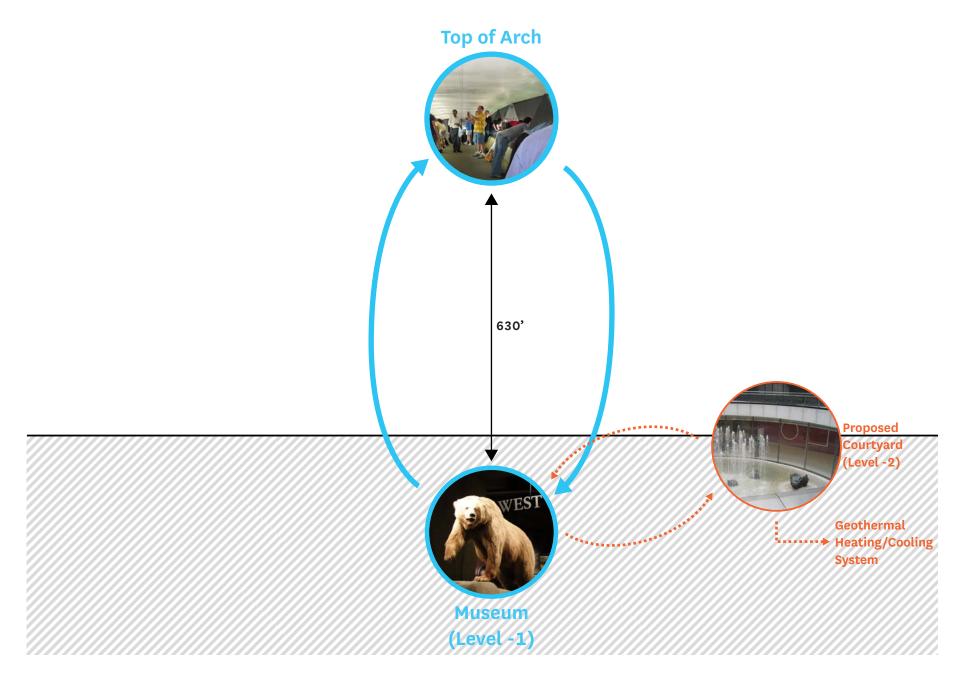
New York City's Metropolitan Museum rooftop, with its spectacular views of park and city, is a major draw for events and special programming.



FAÇADE PRECEDENT

Façade concept for fall / winter condition.

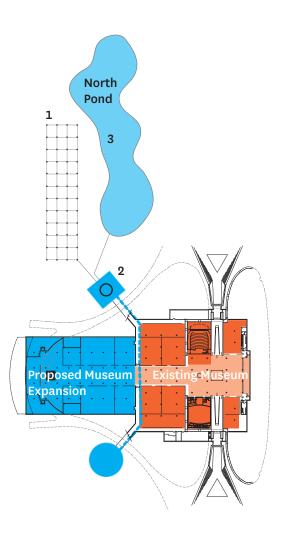
MUSEUM EXPANSION 109





EXISTING CONDITIONS

There are two key reasons to create an intervention with the north service entry. First, despite the efforts of Saarinen and Kiley, the service entry is still highly visible, and unsightly, within the Memorial landscape. Second, doubling the amount of museum space on the site will necessitate renovations to the facility's mechanical, electrical, and plumbing systems, presenting a natural opportunity to address inhabitable place nestled into the landscape.



GEOTHERMAL TEMPERING SYSTEM

- 1. Field of Shallow Wells
- 2. Deep Well
- 3. Pond as Thermal Sink or Field of Shallow Wells

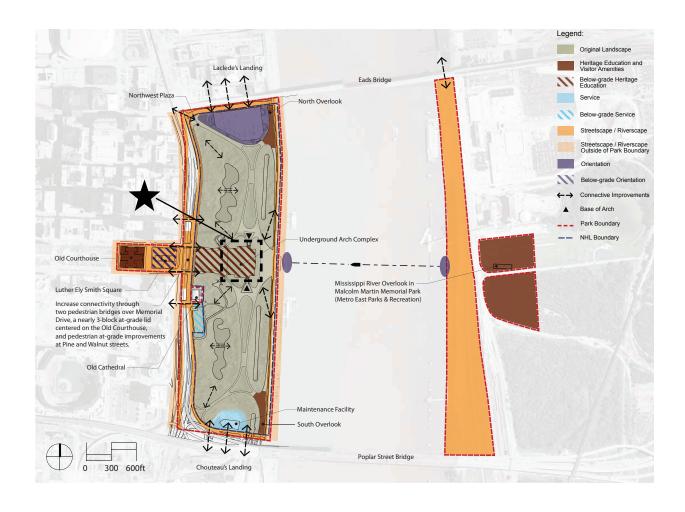
MUSEUM EXPANSION 111

Museum Expansion: Technical Notes

EIS CONFORMANCE

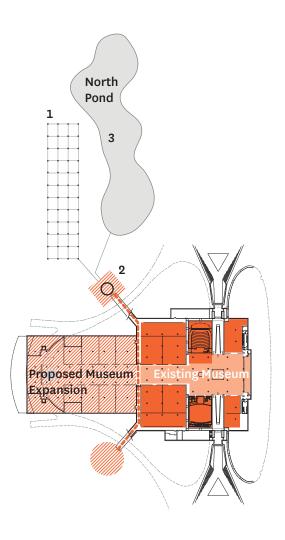
"Visitor opportunities are expected to improve with the redesign of exhibits to include more interactive experiences at the expanded Museum of Westward Expansion and at the Old Courthouse.... Visitors would benefit from additional activities and special events throughout the grounds of the Memorial.... Visitor experience would improve with the development of barrier-free access to the Museum of Westward Expansion, via a new entrance near Memorial Drive.... Visitors would be expected to benefit from the expansion of food services.... Visitor opportunities would improve with the development of barrier-free access and improved streetscapes and connections with downtown and local neighborhoods...."

P. 4:27, Jefferson National Expansion Memorial, Final General Management Plan/Environmental Impact Statement, October 2009



MEP EXPANSION AND SYSTEMS IMPROVEMENTS (GEOTHERMAL)

The new buildings at the Jefferson National Memorial Arch complex will employ a highly energy efficient radiant floor system for heating and cooling. A network of piping will circulate liquid through the exposed concrete structure and through the earth and the river to take advantage of the natural tempering and heat-exchange effects of the earth and the river. During the cooling season, the liquid will be cooled by both the natural springs in the earth which are at a constant temperature of 51 degrees Fahrenheit, while during the heating season the natural insulating effects of the earth and the springs will keep the liquid above the freezing temperature, reducing the need for additional mechanical conditioning.

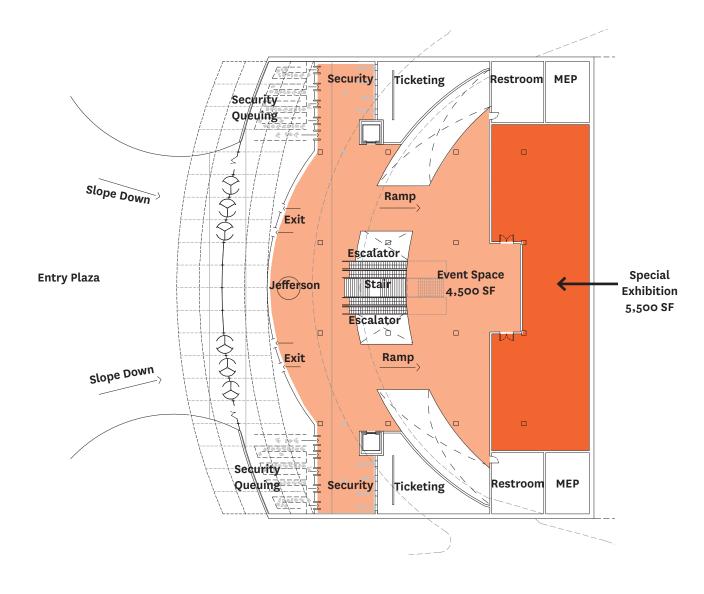


GEOTHERMAL TEMPERING SYSTEM

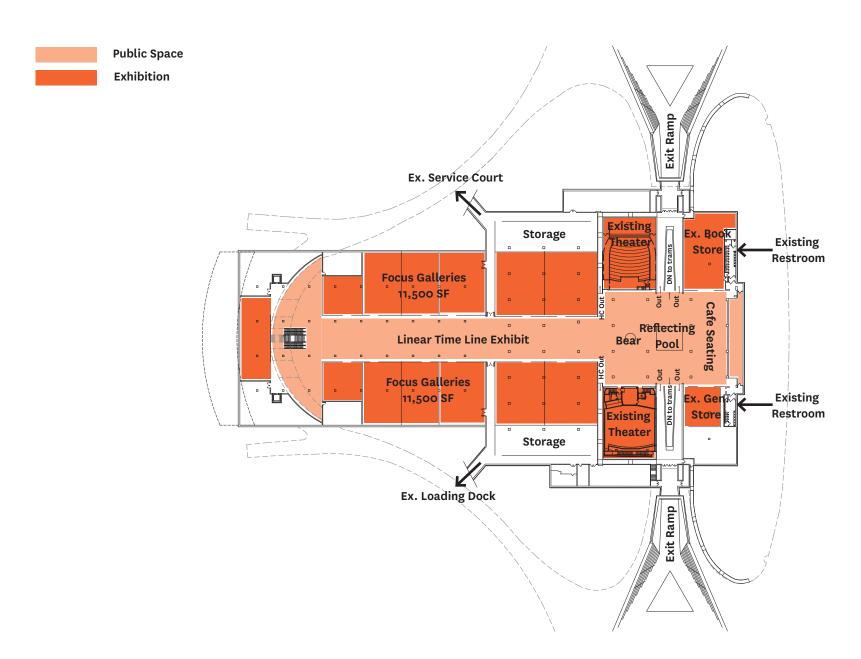
- 1. Field of Shallow Wells
- 2. Deep Well
- 3. Pond as Thermal Sink or Field of Shallow Wells

PROGRAM DIAGRAMS STREET LEVEL





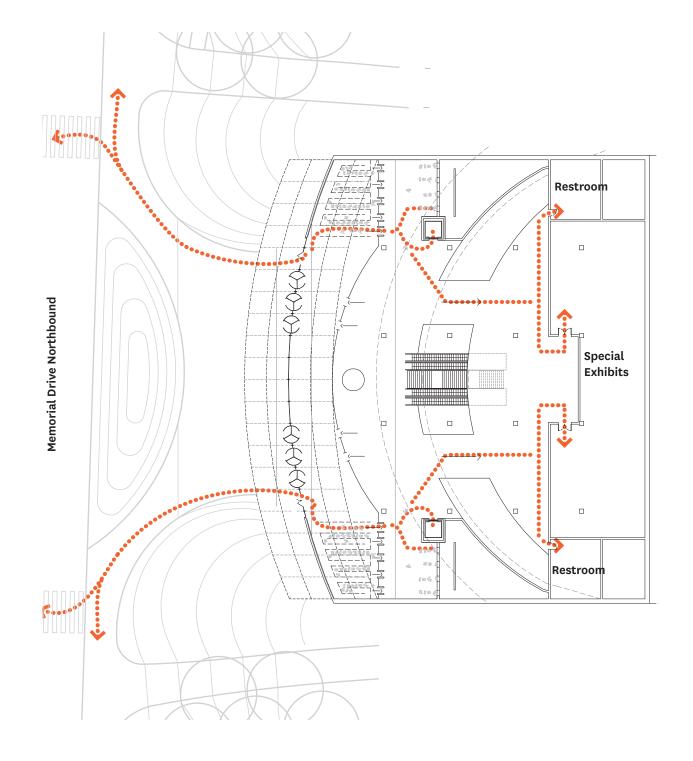
PROGRAM DIAGRAMS LEVEL -1



ADA ACCESS STREET LEVEL

ADA Compliant Pathways

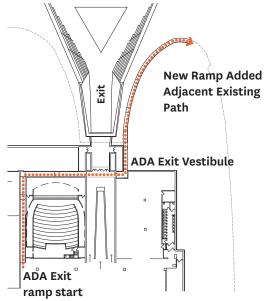
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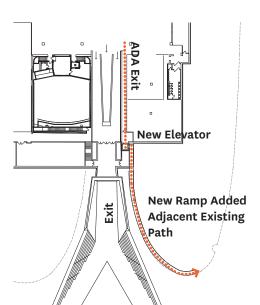


ADA ACCESS DIAGRAMS LEVEL -1

ADA Compliant Pathways

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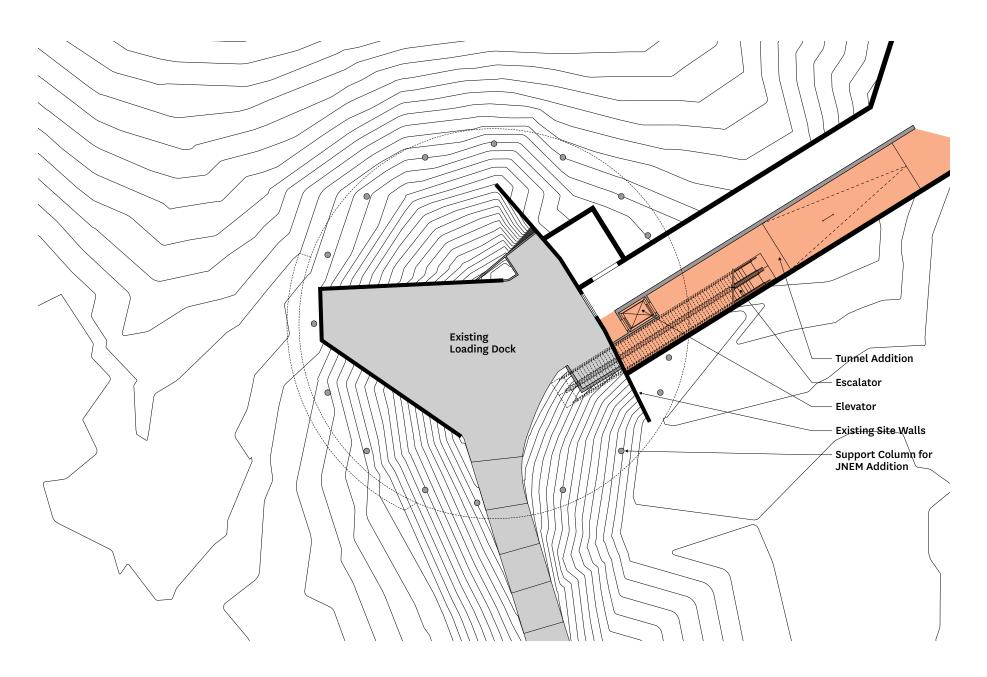


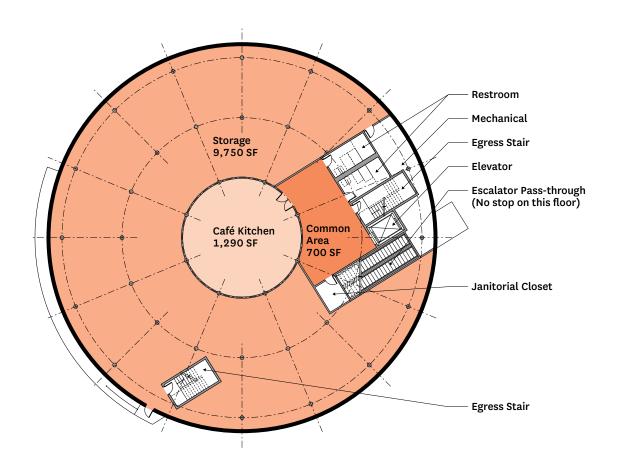


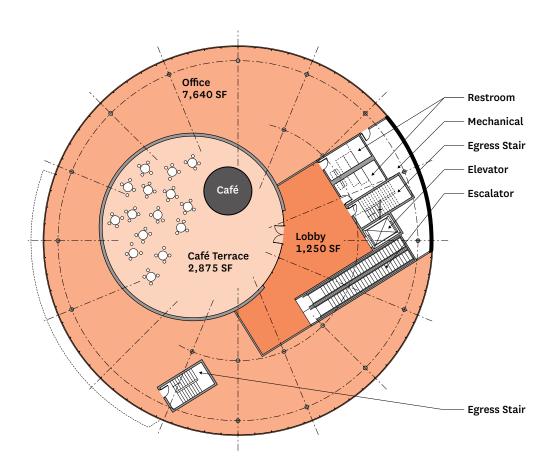
ADA Access study 1 (North Portion Shown: Assume Symmetry)

ADA Access study 2 (South Portion Shown: Assume Symmetry)

LEVEL -1





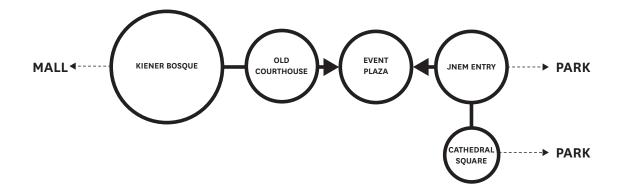


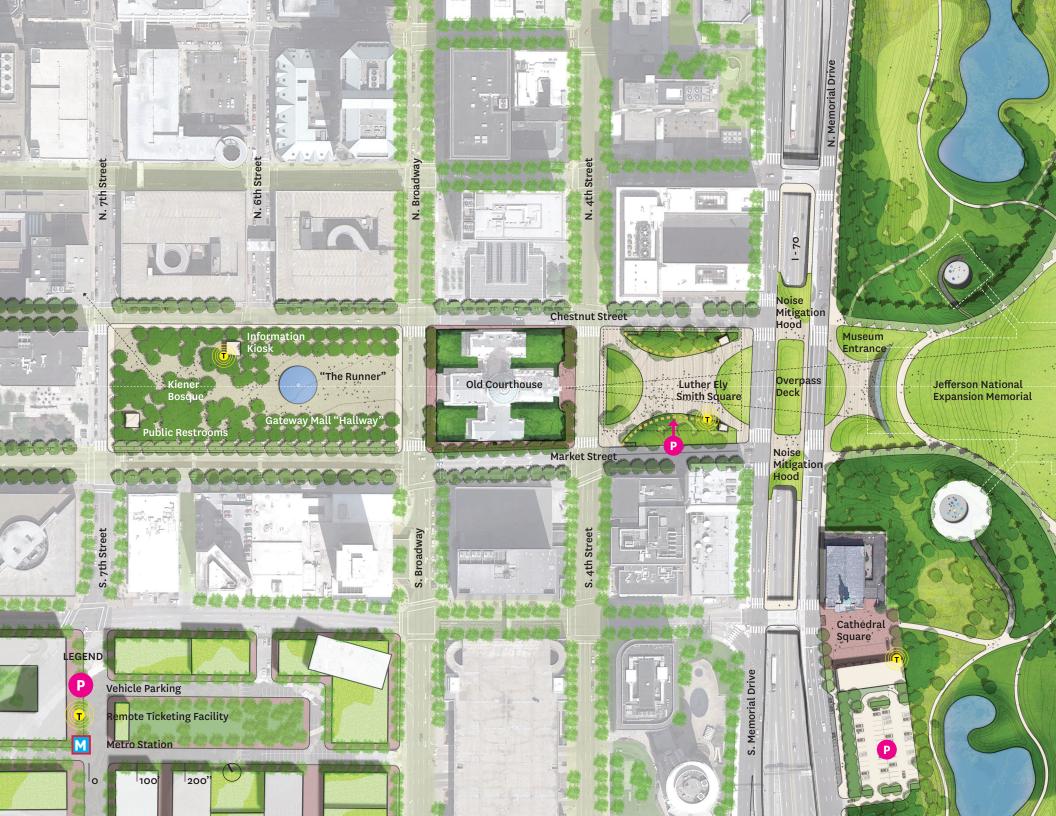
6. West Gateway

ESTABLISH GATHERING SPACES THAT ANCHOR GATEWAY DISTRICTS

With the goal of reinforcing Saarinen and Kiley's ceremonial approach, our proposal creates a three-block-wide pedestrian priority corridor along the St. Louis Mall, featuring narrowed streets, widened sidewalks, and a greener, shadier streetscape. Within this framework, two new civic landscapes gather energy and activity from the north and south, and create forceful connections east and west.

Kiener Plaza becomes a simple bosque that gathers the playful energy of Citygarden and channels it around the Running Man fountain into a formal processional axis facing the Old Courthouse and the Jefferson National Expansion Memorial. On the other side of the Courthouse, a revitalized Luther Ely Smith Square, built over a new 300-car parking facility, serves as a core civic space, bounded by two of the city's most important cultural institutions. And finally, instead of presenting an uninviting berm to face the city, the Museum of Westward Expansion's new Memorial Drive entrance will serve as a new public façade for the Memorial, providing an intuitive ground floor destination for pedestrians instead of a wall of green. In 2015, as new physical spaces and programs begin to take hold at the Memorial, bringing with them an influx of social and economic activity, this energy will be released along this ceremonial axis out into the city.





KIENER BOSQUE





KIENER PLAZA, EXISTING

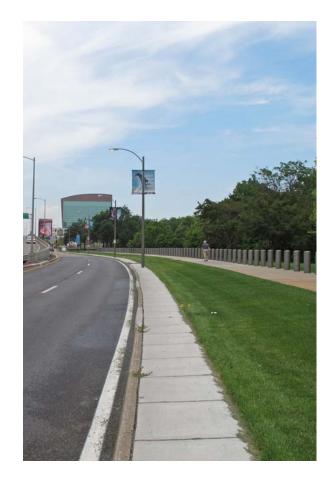
KIENER BOSQUE

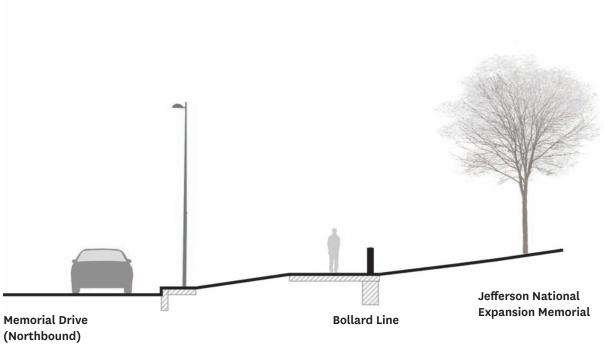
Our proposal unifies all of Kiener Plaza, creating a flat bosque that better connects the eastern end of Citygarden to the Old Courthouse and the Memorial beyond. The bosque features a smooth gradient between formally and informally organized space, and can accommodate everything from large sports rallies to intimate gatherings around a café table. Carefully placed trees frame views of the historic Wainwright Building, and new restrooms and visitor service facilities—including a remote ticketing location—make the Kiener Bosque a natural starting point for a visit to the Memorial.



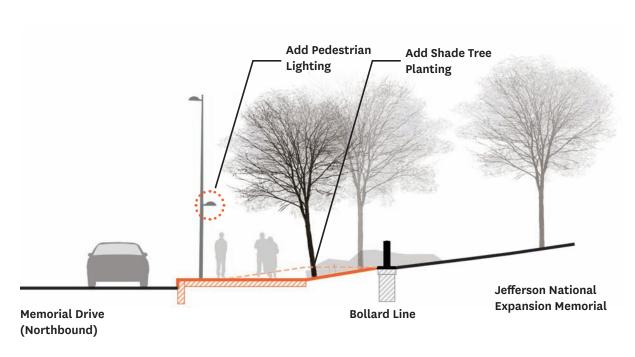
MEMORIAL DRIVE EAST SIDEWALK TRANSFORMATION

EXISTING





PROPOSED (2015)



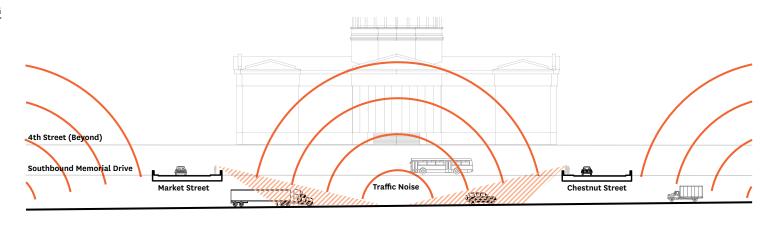


MEMORIAL DRIVE EAST SIDEWALK TRANSFORMATION

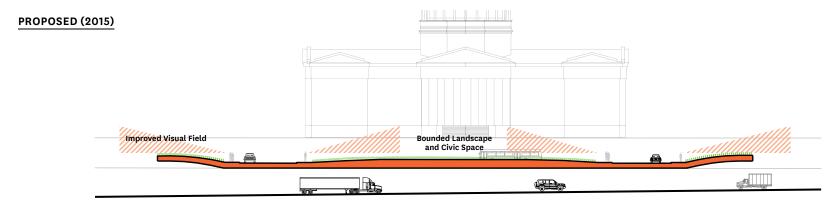
Instead of wasting valuable space on a flat green strip between road and sidewalk, we propose using it to create a more dynamic edge for the Arch grounds and to disguise security bollards behind a sumptuously planted screen.

HIGHWAY TRENCH SOUND & VIEW

EXISTING



< South Existing Interstate 70 Road Cut North >

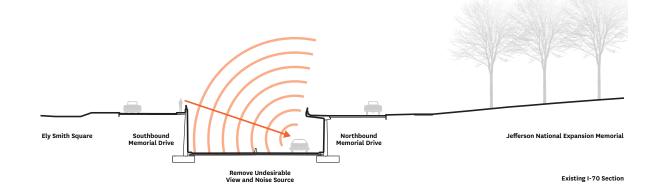


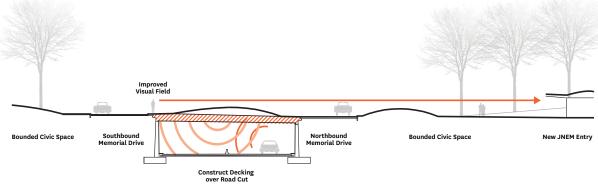
< South Proposed Decking Structure (with Hoods) North >

HIGHWAY TRENCH — SOUND AND VIEW

The Interstate 70 trench is now the most striking barrier between the Memorial and the city.
Our proposal creates physical and experiential continuity by creating a pedestrian overpass between Market and Chestnut Streets. Both the deck itself and the landscape hoods on either side will break direct lines of sight and sound between the highway and Memorial-bound pedestrians, creating a quiet, landscape-focused choreography of approach between Luther Ely Smith Square and the Arch grounds.

We have proposed a one-block overpass, rather than an at-grade boulevard, because it is less expensive, easier to achieve by 2015, and would require fewer jurisdictional and regulatory negotiations. But the benefits of removing the highway altogether are clear, and we have purposely created a proposal that is compatible with either solution.





Proposed I-70 Section

MUSEUM ENTRY





LUTHER ELY SMITH SQUARE, EXISTING

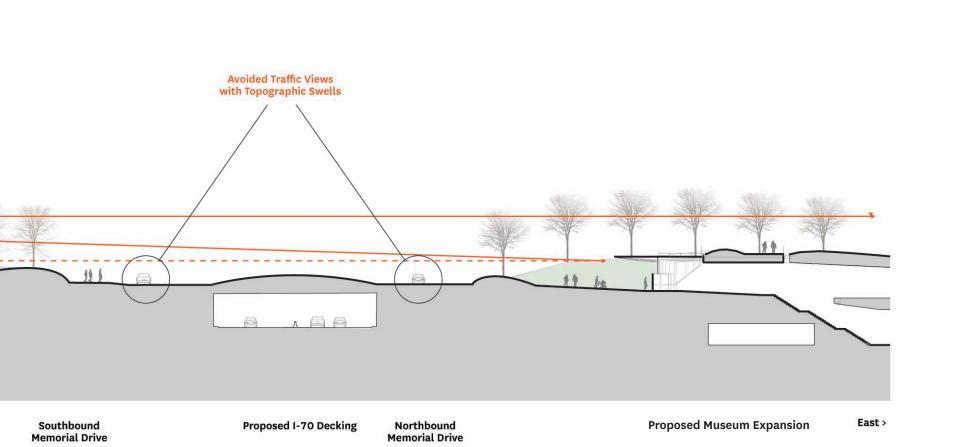
LUTHER ELY SMITH SQUARE

A system of gentle landscape berms between the Old Courthouse and the new Memorial Drive entrance to the Museum of Westward Expansion create sight lines of unbroken landscape into the Memorial grounds and beyond, forging forceful visual connections along the Saarinen vista and completing the green corridor of the Gateway Mall. This will be a perfect venue for a program of engaging, interactive public art, since installations on this site can attract visitors and then distribute them to the Old Courthouse, the Museum, or the Memorial landscape.

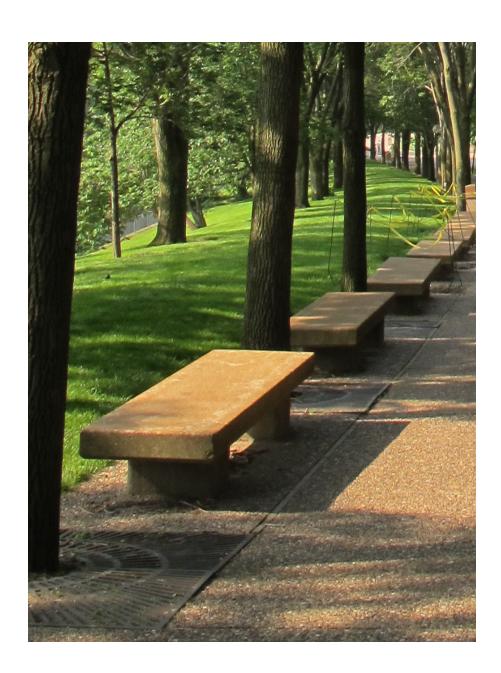


LUTHER ELY SMITH SQUARE





LUTHER ELY SMITH SQUARE



EXISTING SEATING

The Saarinen-Kiley benches are exemplars of the Modern style, but they are also highly formal, rigid, backless, and invite only brief stays.



LUTHER ELY SMITH SQUARE





CATHEDRAL SQUARE





CATHEDRAL BASILICA OF ST. LOUIS, EXISTING

CATHEDRAL SQUARE RESTAURANT

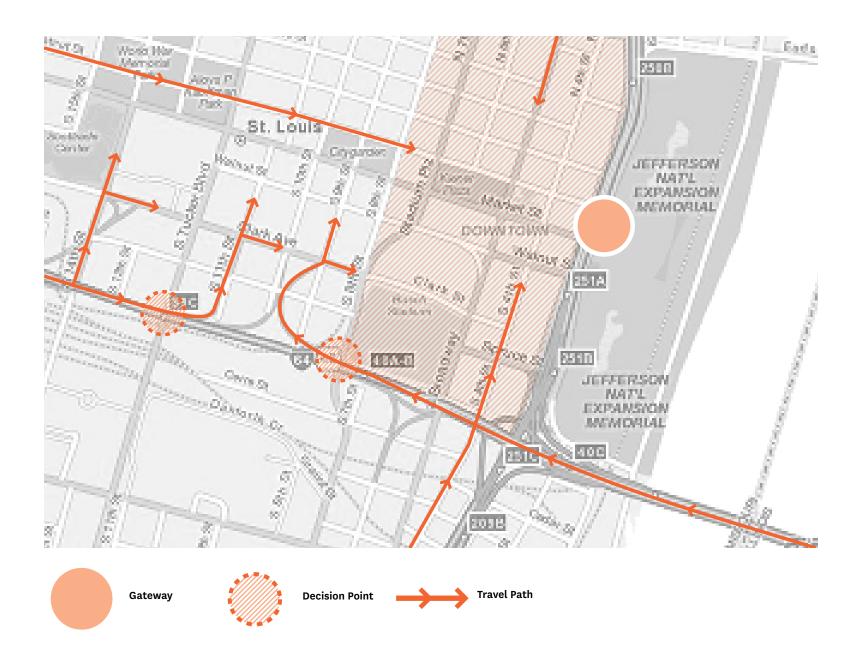
A new town square outside the Cathedral Basilica of St. Louis creates a local destination at the terminus of Market Street. Opposite the Cathedral, a restaurant with a banquet hall provides space for wedding receptions and other events, with views of the interior landscape, the south reflecting pond, and, of course, the Arch. This location will be appreciated in particular by tour groups, who will arrive on the Arch grounds via the adjacent bus drop-off on Memorial Drive.



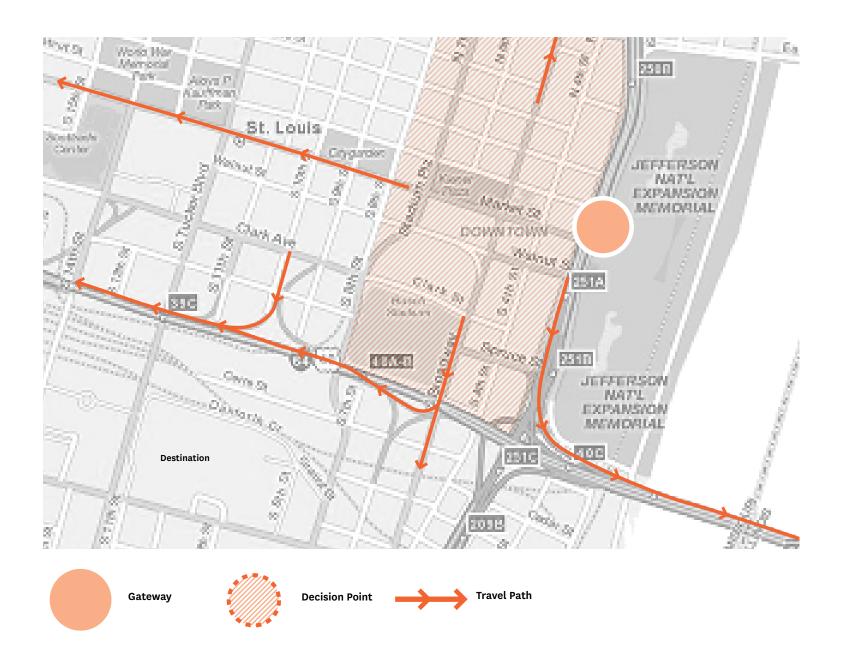
WEST GATEWAY 143

West Gateway: Technical Notes

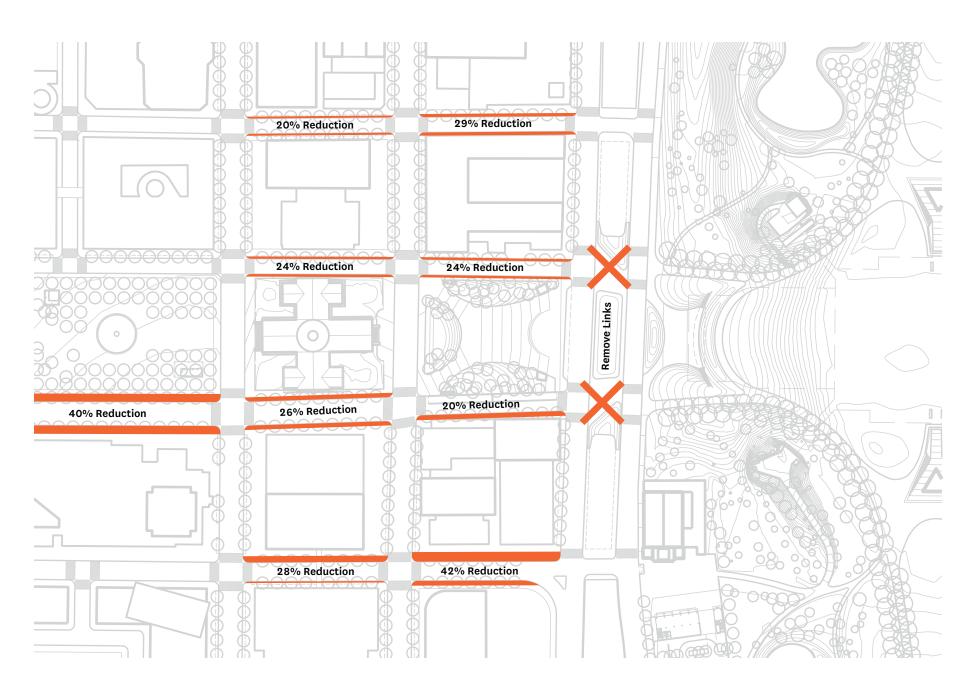
WAYFINDING - ARRIVAL



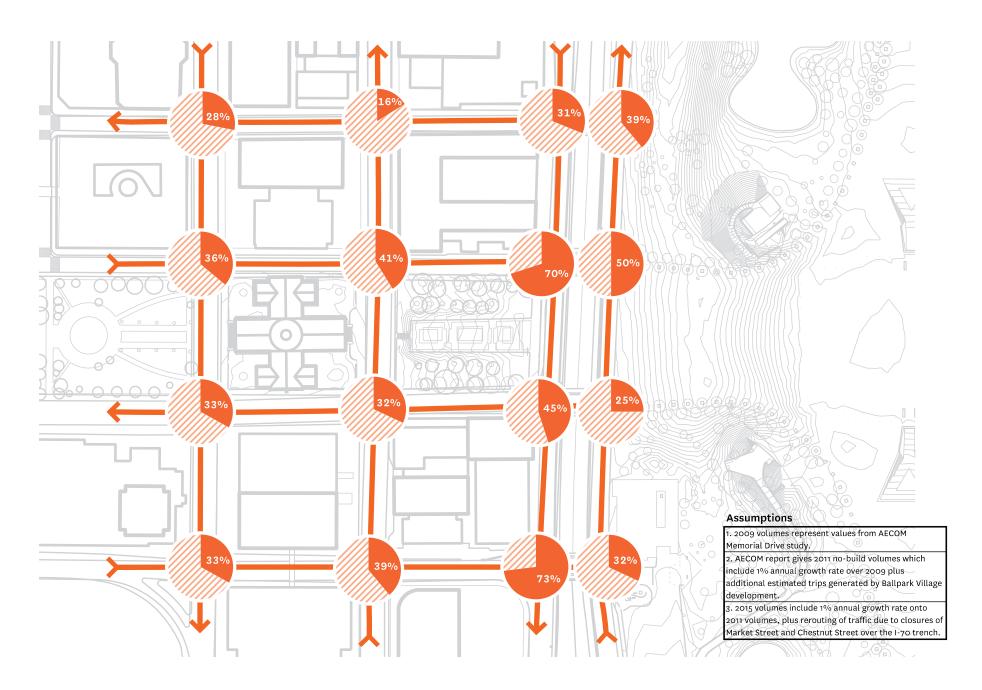
WAYFINDING - DEPARTURE



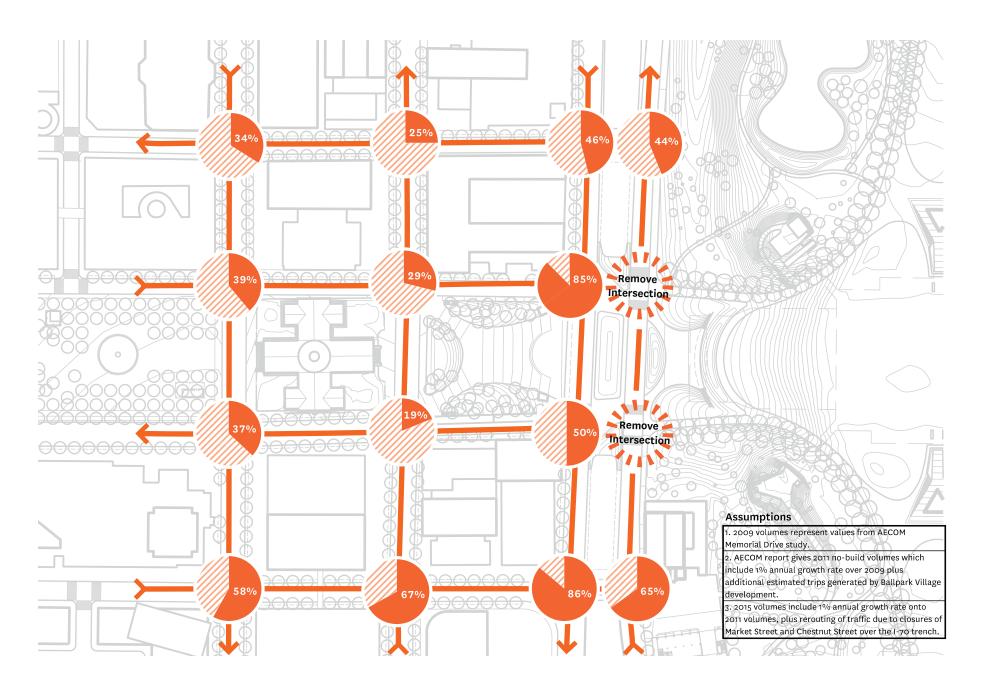
STREETSCAPE REDUCTIONS & CLOSURES



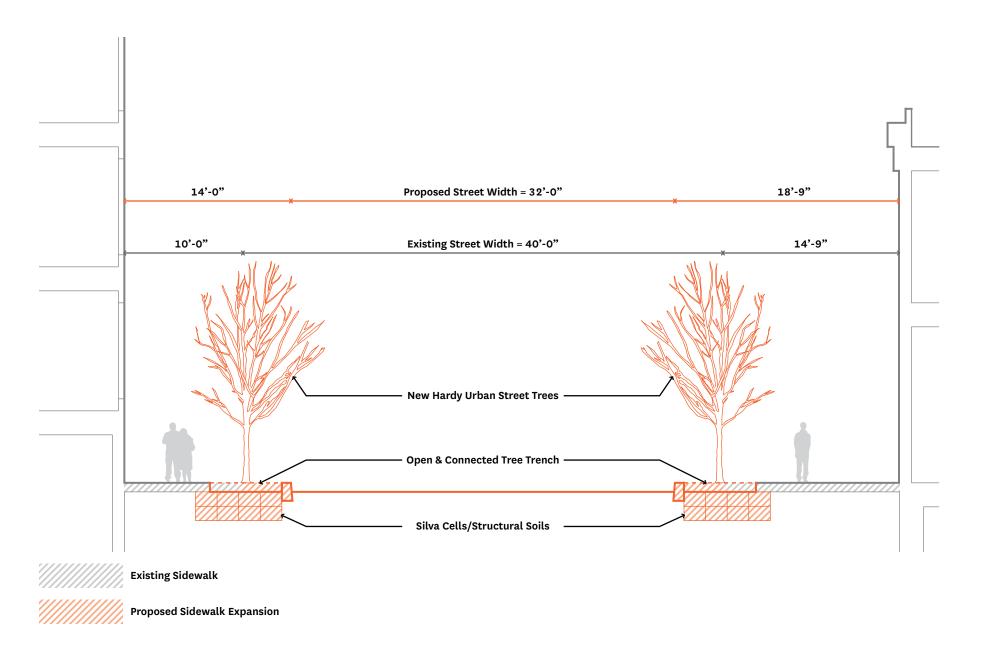
EXISTING TRAFFIC VOLUME TO CAPACITY RATIO — 2009



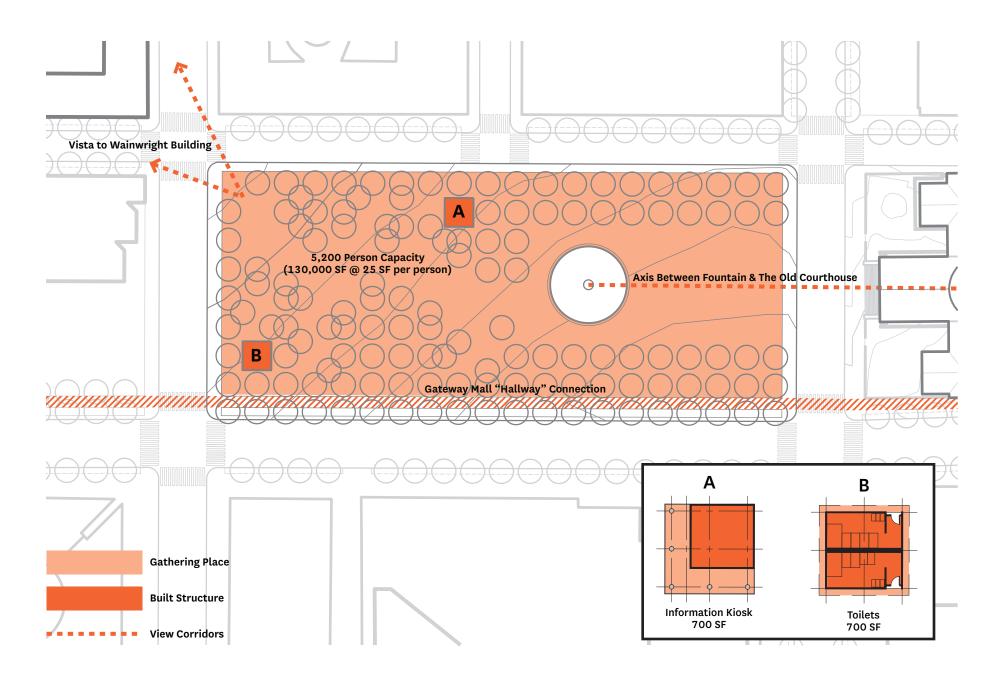
PROPOSED TRAFFIC VOLUME TO CAPACITY RATIO - 2015



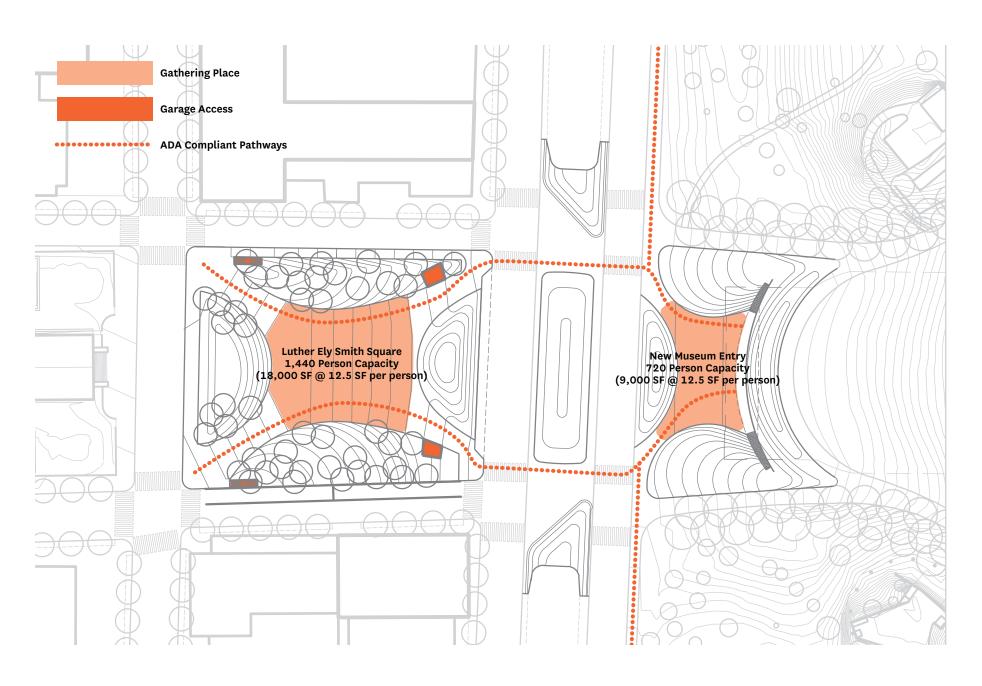
PROPOSED TYPICAL STREETSCAPE SECTION (PINE STREET)



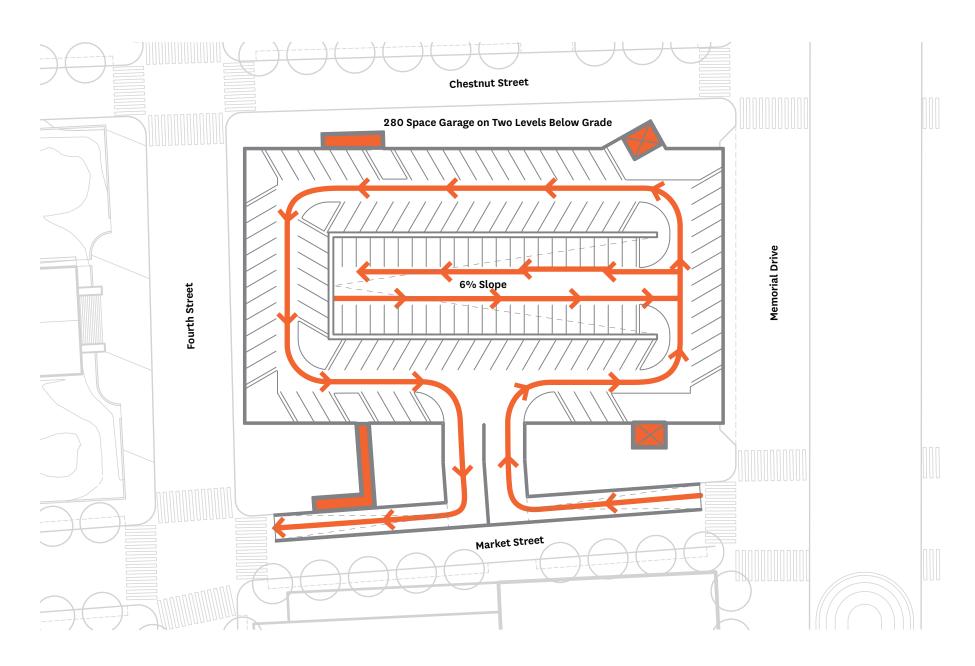
KIENER BOSQUE



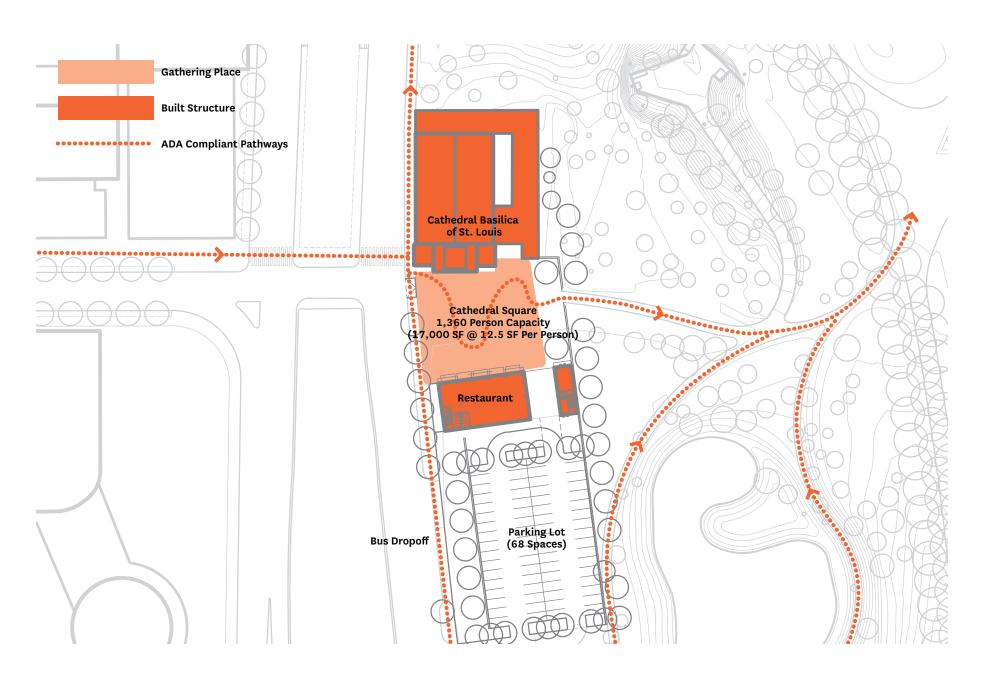
LUTHER ELY SMITH SQUARE ACCESSIBILITY & GATHERING CAPACITY



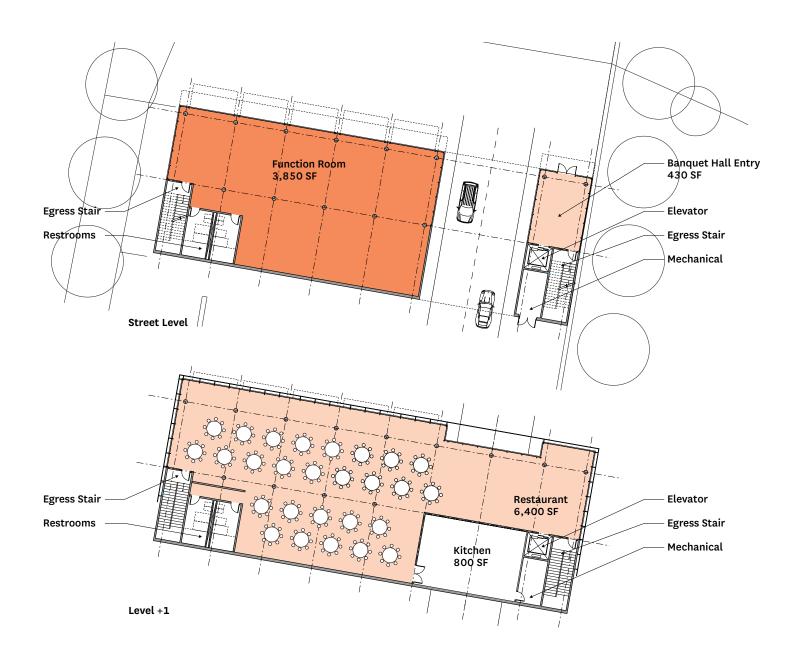
LUTHER ELY SMITH SQUARE BELOW GRADE PARKING GARAGE



CATHEDRAL SQUARE ACCESSIBILITY & GATHERING CAPACITY



CATHEDRAL SQUARE RESTAURANT



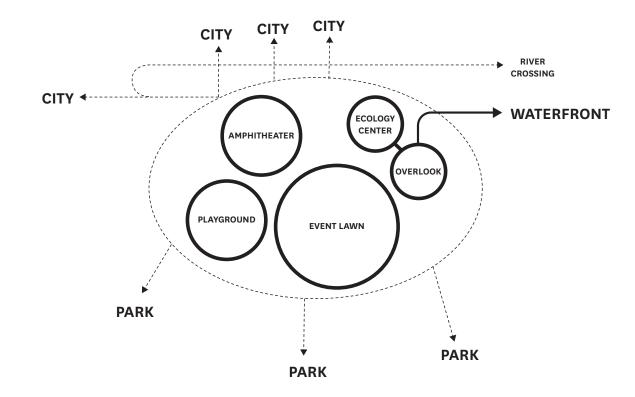
7. North Gateway

NORTH GATEWAY

EMBRACE THE EADS BRIDGE AS A NEW MONUMENTAL THRESHOLD

A 1931 map of St. Louis shows the boundary of the Jefferson National Expansion Memorial site running all the way to the stone foundations of the Eads Bridge. Even though the competition to design the Memorial was still sixteen years away, that map represents a powerful idea—the association of St. Louis's new monument with an older one, a dialogue between the city's industrial past and its vision for the future.

Our proposal draws inspiration from this nascent vision by removing both the Memorial garage and the terminus of Washington Avenue, which is used almost exclusively by garage patrons. Our reimagined Memorial margin will embrace the Eads Bridge as a monumental threshold, turning the openings in the bridge into portals to a welcoming neighborhoodscale edge landscape. Instead of being confronted by a concrete garage wall, pedestrians looking down North 1st or North 2nd Street in Laclede's Landing will see sunbathers and recreational athletes in the Eads Commons, children in the Gateway Playscape, and a concert or a movie on the Overlook Lawn or the Eads Amphitheater. The North Gateway will be the heterogeneous, highly informal center for recreation and relaxation on the Arch grounds. Tapping into the emergent urban energy of the Washington Avenue loft district and immediately raising the value of real estate in Laclede's Landing, the North Gateway will be the physical and programmatic force that ties the Memorial most closely to the lives of St. Louis residents.



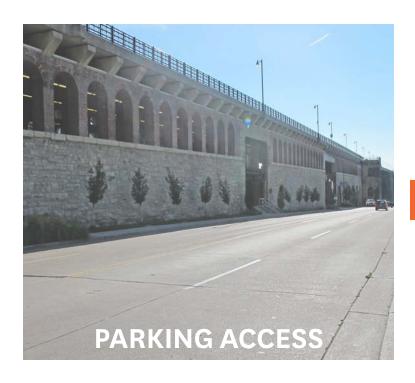


REMOVAL OF WASHINGTON AVENUE TERMINUS

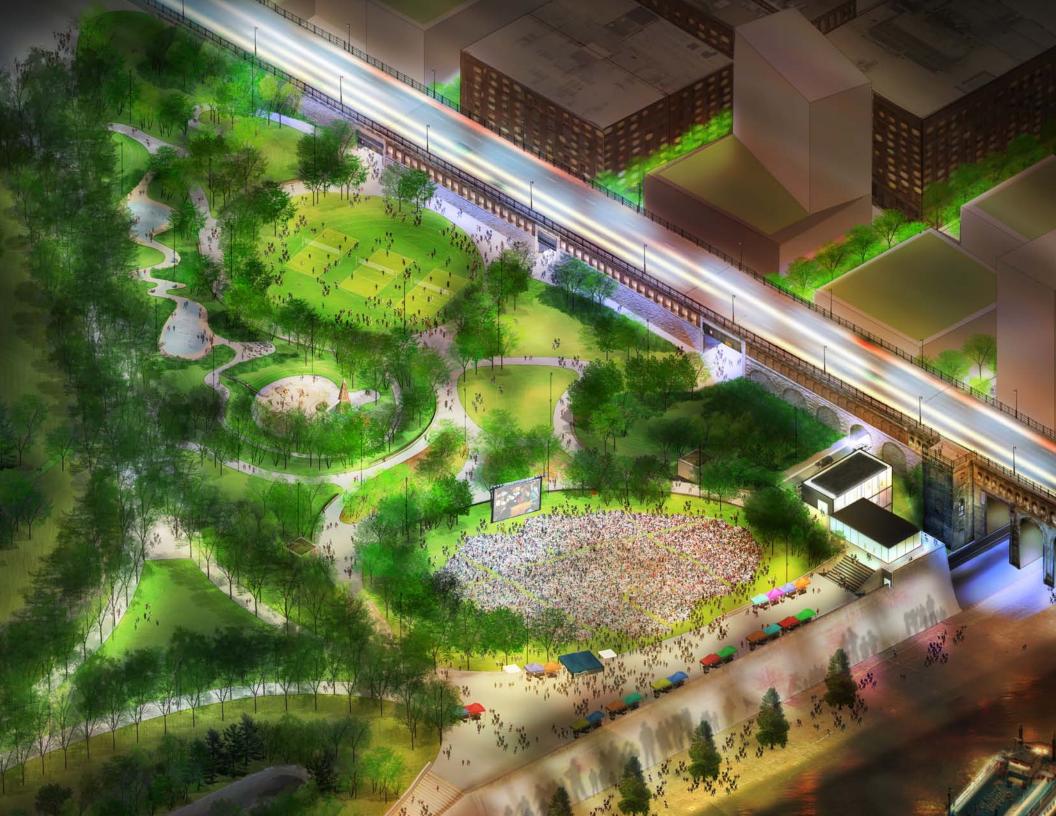


JNEM BOUNDARIES, 1931

This 1931 map, made sixteen years before the original JNEM design competition, shows the Memorial site contiguous with the Eads Bridge. Our proposal realizes this idea by removing the terminus of Washington Avenue.







PLAY & PARK

Unlike most other areas of the competition site, the North Gateway will be a place where many different kinds of things can go on simultaneously, creating the hum of activity that characterizes any successful neighborhood park. It will be shared by Memorial visitors looking for a comfortable place to wait for their ride to the top of the Arch and by local families looking to spend an afternoon throwing balls at a playground or just reading and relaxing on a bench under a tree.













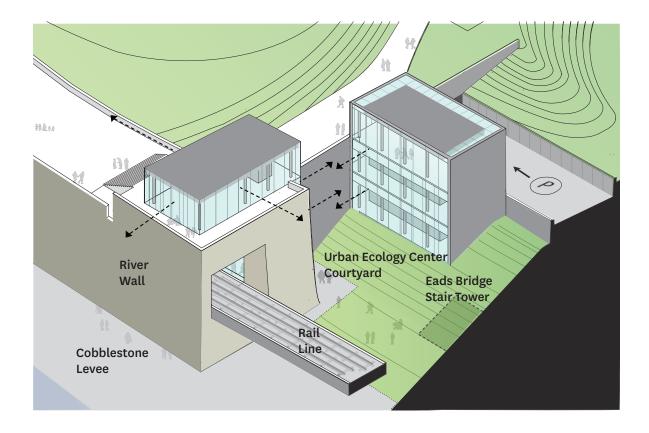
NORTH GATEWAY 165

GATEWAY URBAN ECOLOGY CENTER

EXPANDING THE MEMORIAL'S EDUCATIONAL MISSION

Drawing on precedents such as the Crissy Field Center at the Golden Gate National Recreation Area and the Center of Creative Arts in St. Louis, the North Overlook Pavilion will house the Gateway Urban Ecology Center, a new locally oriented National Park program that runs after-school programs and summer camps with a focus on engineering and the natural sciences for students from both St. Louis and East St. Louis.

With over ten thousand square feet of classroom, laboratory, and exhibition space, the Urban Ecology Center will allow students of all ages to explore the interaction of the built and natural environments as they relate to urban wildlife, ecosystem restoration, biomimicry, and hydrological science and engineering. Beyond the dedicated facility building, the Center will take full advantage of the reinvigorated Arch grounds, the River, and the JNEM East Wetland Reserve as living laboratories for discovery and research on tree health, riverine ecology, avian migration patterns, and the engineering of the Arch, the levee, and the river gauges.



Just as importantly, the Center will expose young people to the mission and accomplishments of the National Park Service in a time of unprecedented uncertainty about the organization's future. Students at the Urban Ecology Center will come into close contact with passionate and knowledgeable Park Service staff and perhaps grow into volunteer leadership roles as they progress through the program. This is an opportunity for the Park Service to use a new kind of National Park to tap into a new audience and visitor demographic, and to inspire a new generation of Americans to see the Park Service as an invaluable national asset.

The North Overlook Pavilion is directly linked to the Urban Ecology Center and will serve as an exhibition hall where Memorial visitors can view student research and projects. A public elevator will provide accessible passage between the overlook, the North Gateway landscape, the levee, and a viewing room that opens onto the rail tunnel under the Memorial.



NORTH GATEWAY 167



VIEW FROM ARCH - LACLEDE'S METROLINK STATION

Our proposal transforms the Memorial's north edge from what is in essence a solid concrete barrier into a welcoming and accessible threshold landscape that draws locals, in addition to tourists, to the Arch grounds.

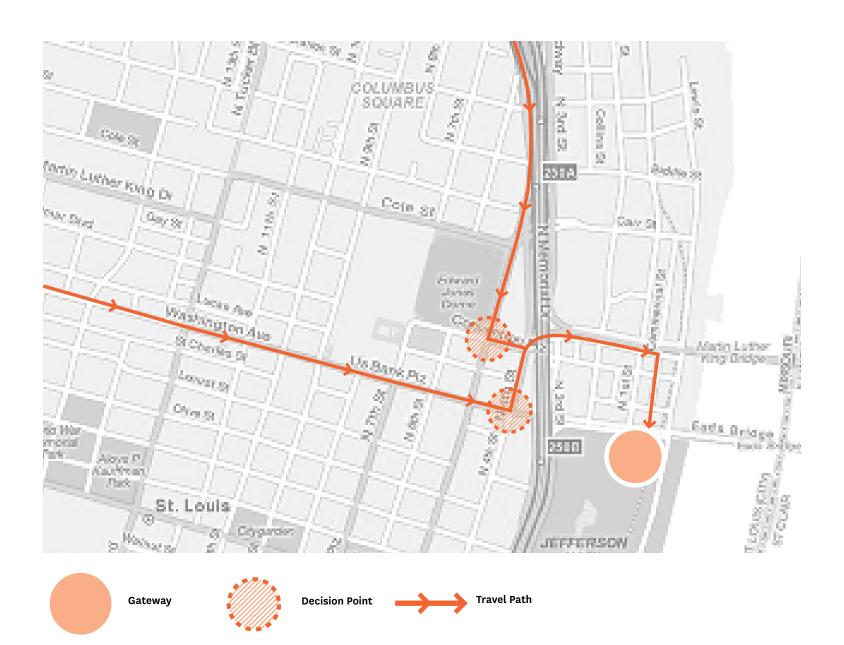


NORTH GATEWAY

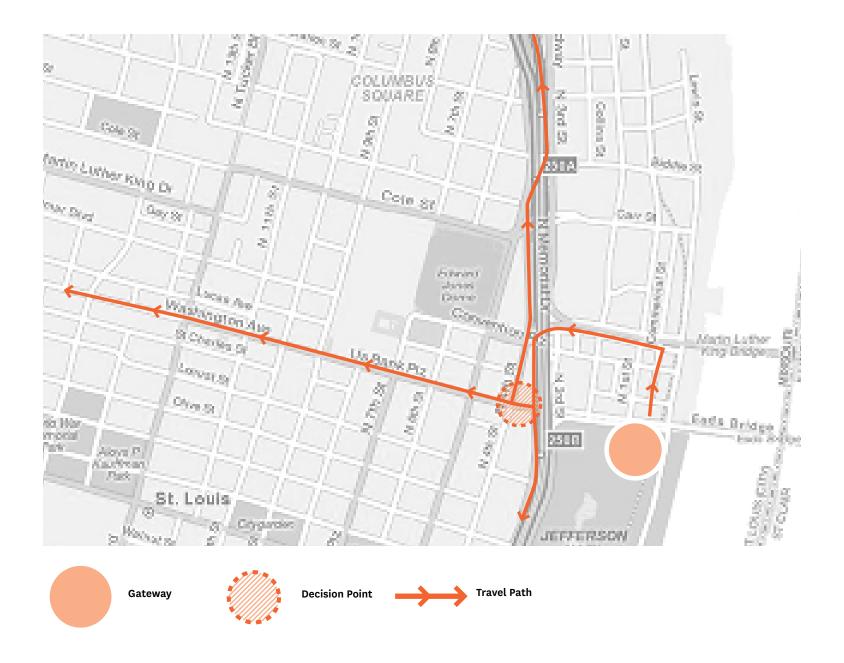
North Gateway: Technical Notes

NORTH GATEWAY: TECHNICAL NOTES 171

WAYFINDING — ARRIVAL

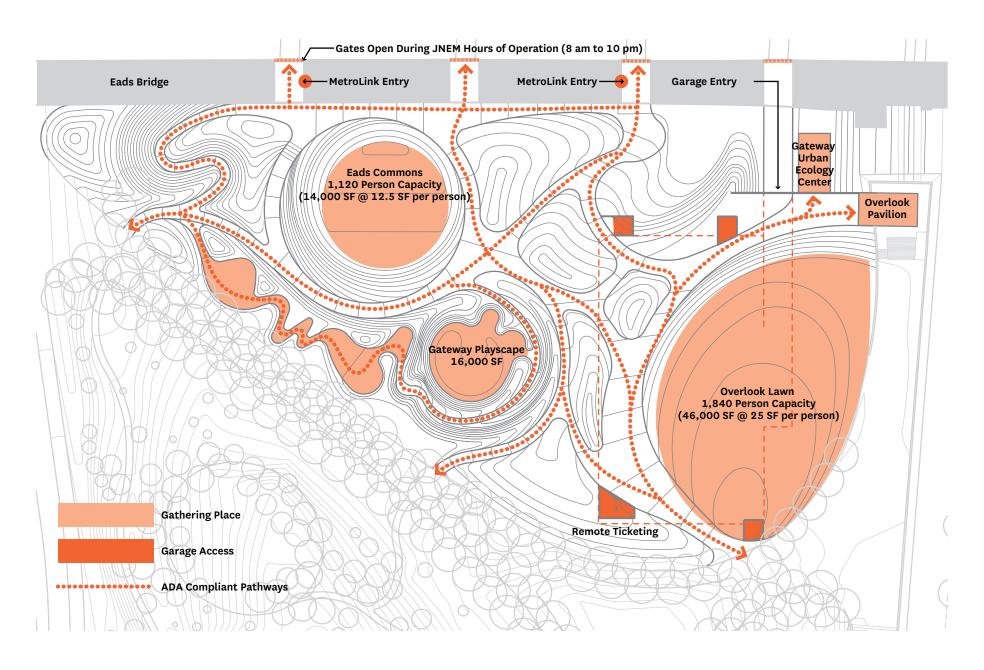


WAYFINDING — DEPARTURE

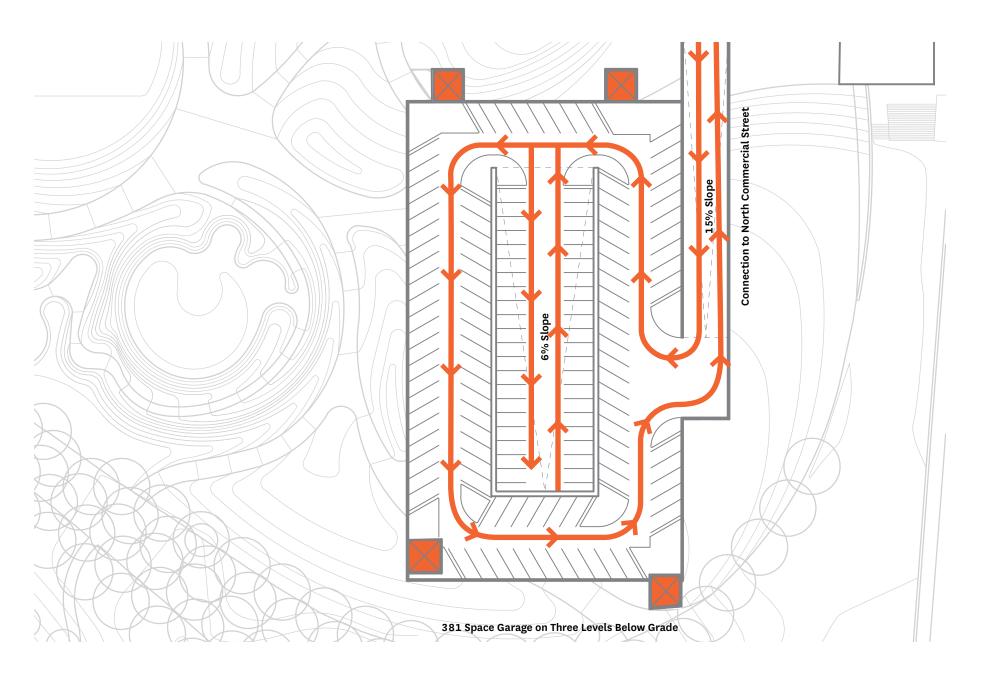


NORTH GATEWAY: TECHNICAL NOTES 173

ACCESSIBILITY & GATHERING CAPACITY

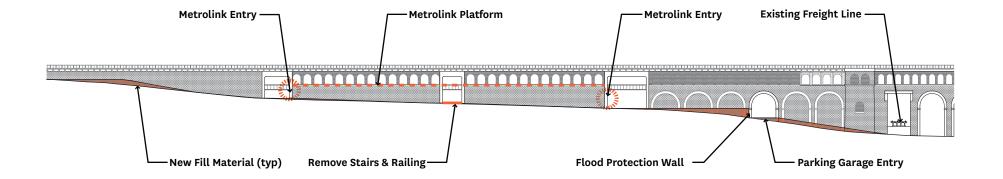


BELOW GRADE PARKING GARAGE

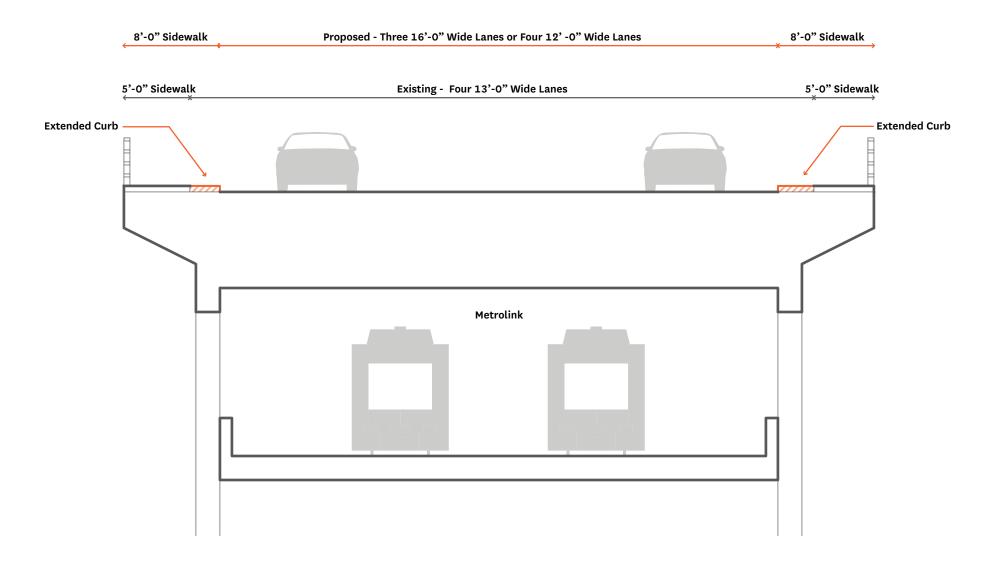


NORTH GATEWAY: TECHNICAL NOTES 175

PROPOSED CHANGES TO GRADING ALONG EADS BRIDGE

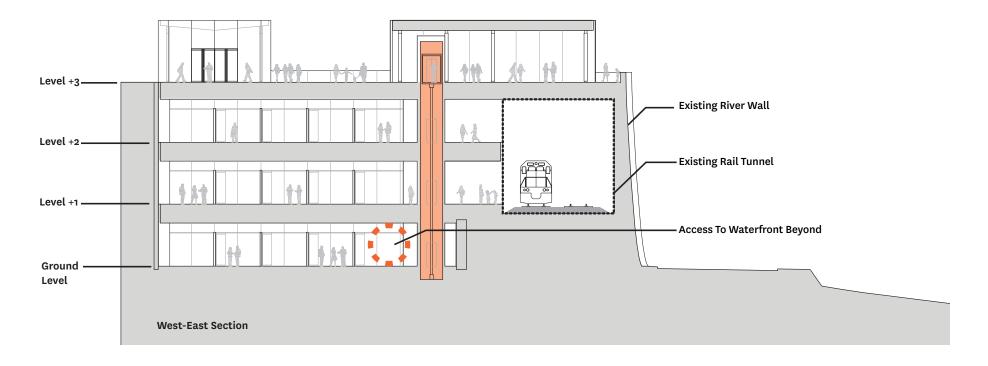


PROPOSED SECTION THROUGH EADS BRIDGE

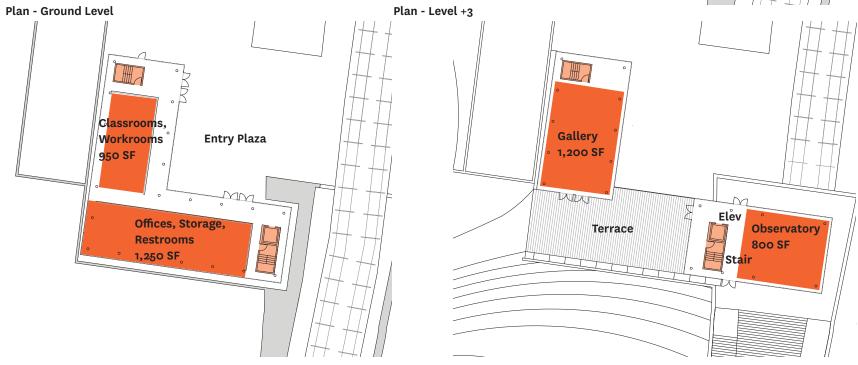


NORTH GATEWAY: TECHNICAL NOTES 177

OVERLOOK PAVILION AND GATEWAY URBAN ECOLOGY CENTER







8. South Gateway

SOUTH GATEWAY 183

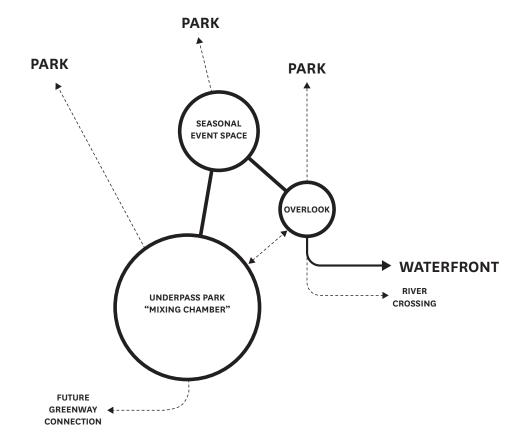
INCORPORATE YEAR-ROUND NEIGHBORHOOD DESTINATIONS

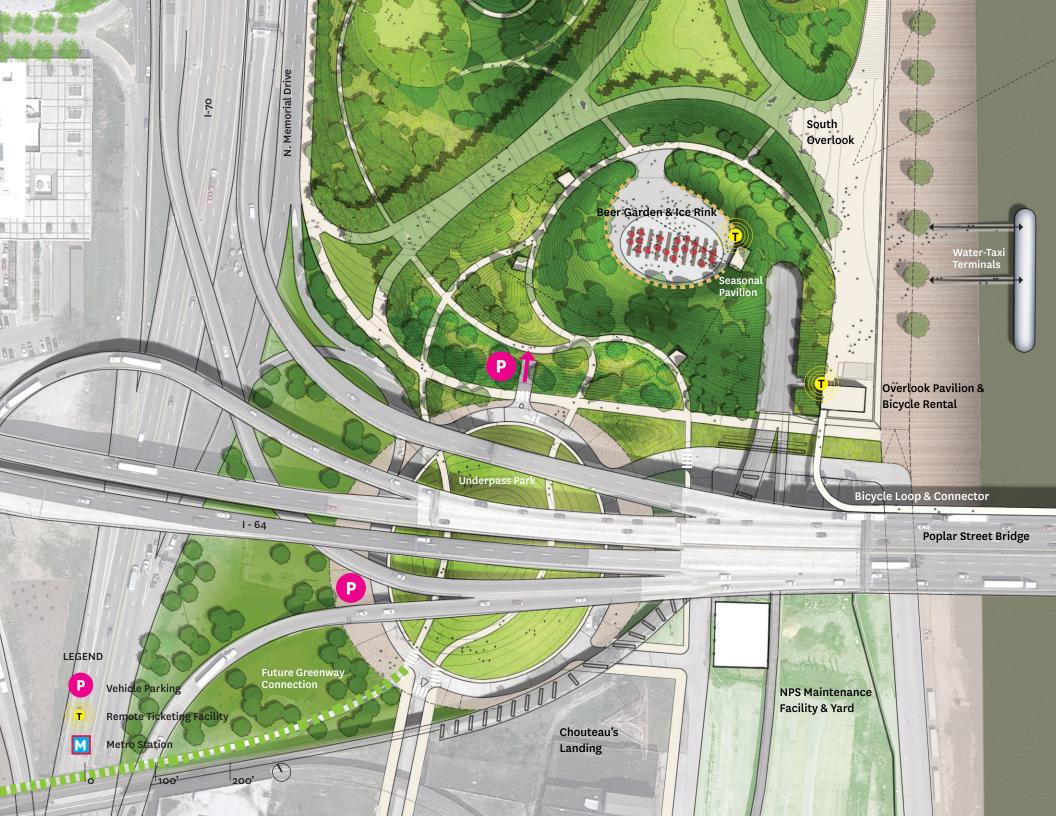
Approaching the Jefferson National Expansion Memorial from the south is currently a bleak and unwelcoming experience. From the largely abandoned loft district of Chouteau's Landing, one must venture through the no-man's-land of broken glass and parking created by the Poplar Street Bridge overhead, cross Poplar Street, which combines a highway interchange and a service road, and confront a buffer landscape designed to disguise the JNEM maintenance and operations building from Memorial visitors.

Within this large stretch of land, owned by the city but tangled up in state and federal jurisdiction over bridge structures and flood controls, landscape design can transform the meaning of this space, from a stockyard of undesirable vehicles and urban blight to an underpass park—a mixing chamber of existing and proposed connections between the city and the Memorial. New links will help establish the fledgling Chouteau's Landing arts district, which in turn will become a larger-scale connection between the Arch grounds and the LaSalle Park and Soulard neighborhoods beyond.

Our proposal transforms the negative association of the underpass into a landscape bridge to the Arch grounds by creating an earthen groundswell of short meadow grass that frames the monolithic scale of the bridge abutments. The underpass park is bounded by a low-speed traffic rotary and a ring of RV parking, and is bisected by a bicycle and pedestrian path that connects directly into the Memorial site. Toward the river, the maintenance building and yard take up a new unobtrusive position under the bridge, with access to the Arch grounds and the waterfront via a portion of Poplar Street that has been reserved as a dedicated service route.

On the previous site of the maintenance building, a sweeping oval earthform brings visitors up to the level of the Memorial's processional pathways via several accessible footpaths. Nestled in a depression at its peak, atop a below-grade parking structure, a mid-size gathering and event space—a beer garden in the warm months and a skating rink in winter—will draw visitors to the currently under-populated south side of the Arch grounds and be a generator of local energy in the emerging Chouteau's Landing neighborhood.





ARTS, CULTURE, & THE JEFFERSON NATIONAL EXPANSION MEMORIAL













INTERPRETING AN INDUSTRIAL LEGACY - CHOUTEAU'S LANDING, THE CITY MUSEUM AND THE GRAFFITI FLOOD WALL

St. Louis, Missouri

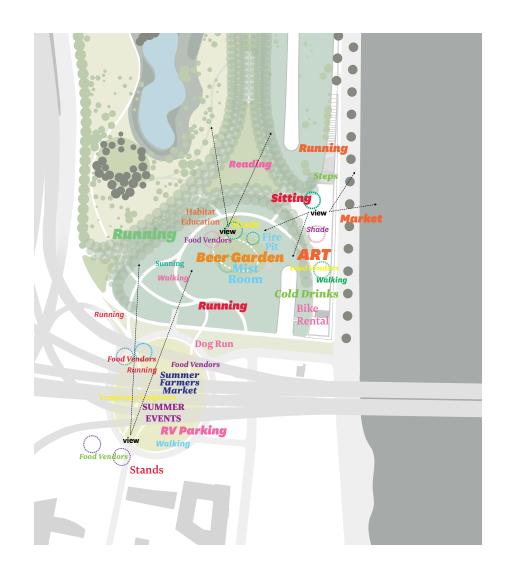
A NEW CANVAS FOR URBAN ART

Chouteau's Landing is being developed as a new mixed-use neighborhood focused on the St. Louis arts scene and community, which has long been a pioneer in the reinterpretation of the city's industrial heritage and legacy. Our proposal, in which new park space reframes the experience of large-scale elements of infrastructure, provides a framework for that community-scale artistic energy to expand northward; the southern boundary of the Arch grounds will be a place where local culture and the Memorial's interpretive mission intermingle.

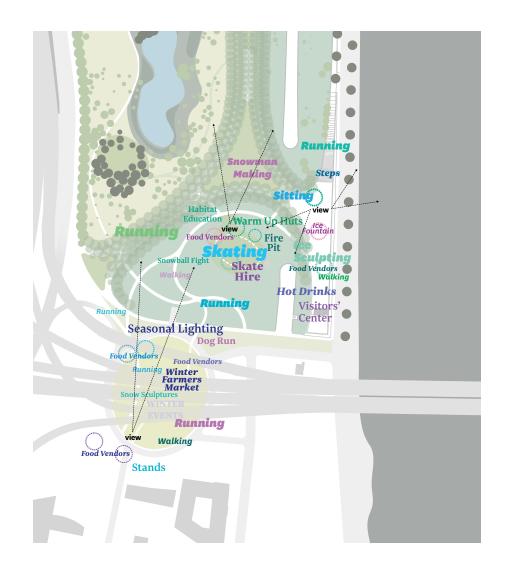


SOUTH GATEWAY 187

SEASONAL PROGRAM SUMMER



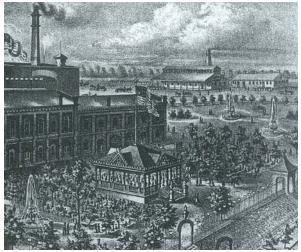
SEASONAL PROGRAM WINTER



SOUTH GATEWAY 189

SUMMER PROGRAM









BEER GARDENS

Historic beer gardens in St. Louis - inspirations for new social spaces

In summer, a beer garden on the site will be a major revenue generator, drawing Cardinals fans on game days and celebrating St. Louis's history as a destination for German immigrants and one of the epicenters of 19th-century American brewing. At the Memorial's beer garden, as in traditional beer gardens, food and drink will be focal points for a much larger culture of entertainment and local community life, with long shared tables and spaces for small performances. We imagine the beer garden as a place where St. Louis's tradition of craft brewing—which dates back to the Louisiana Purchase and has seen a resurgence in recent years—is celebrated.



SOUTH GATEWAY 191

WINTER PROGRAM









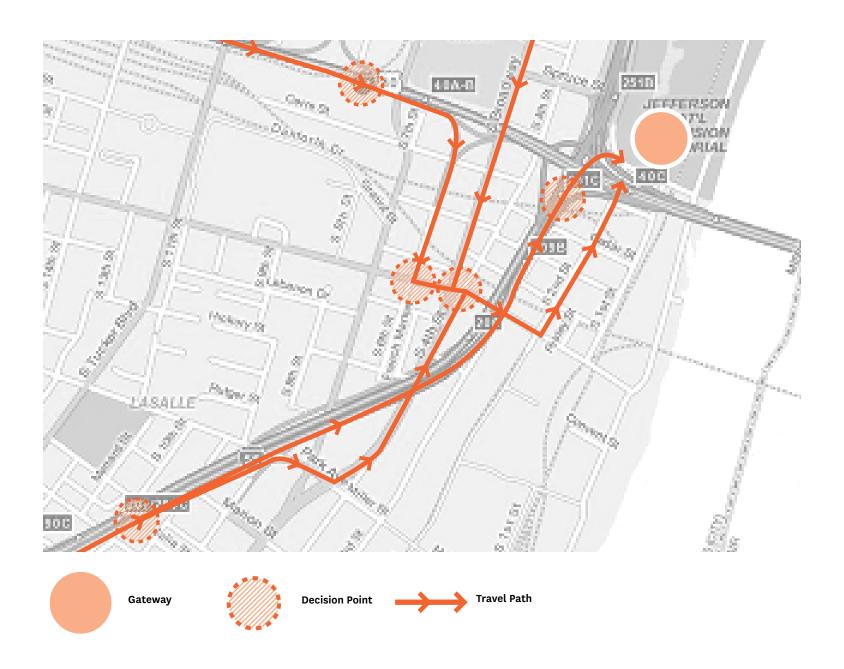
In winter, the beer garden plaza will be flooded to create an oval skating rink, and the support structures for the concession will house a Zamboni, a warming hut, and skate-rental facilities. The rink will keep the south half of the Arch grounds active throughout the year and serve as a family-friendly community asset whose energy stands up to the noise from the Poplar Street Bridge overhead.



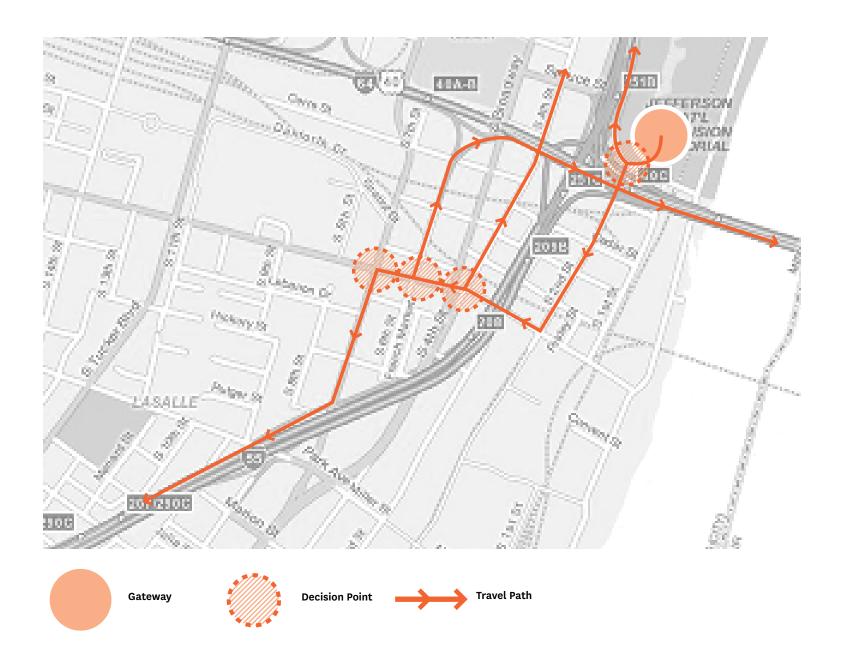
South Gateway: Technical Notes

SOUTH GATEWAY: TECHNICAL NOTES 195

WAYFINDING - ARRIVAL

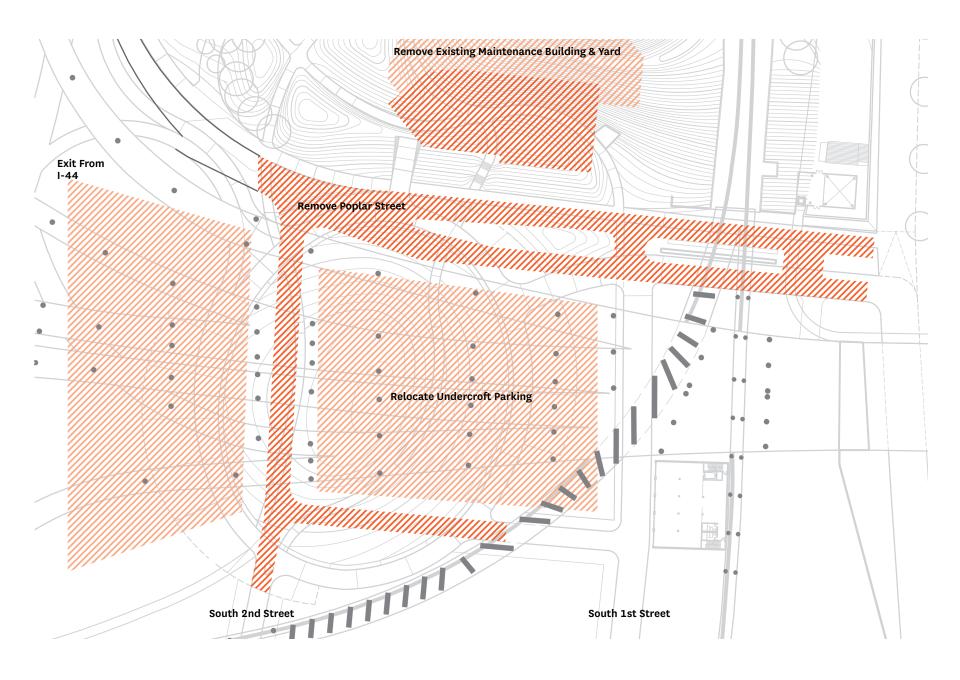


WAYFINDING - DEPARTURE

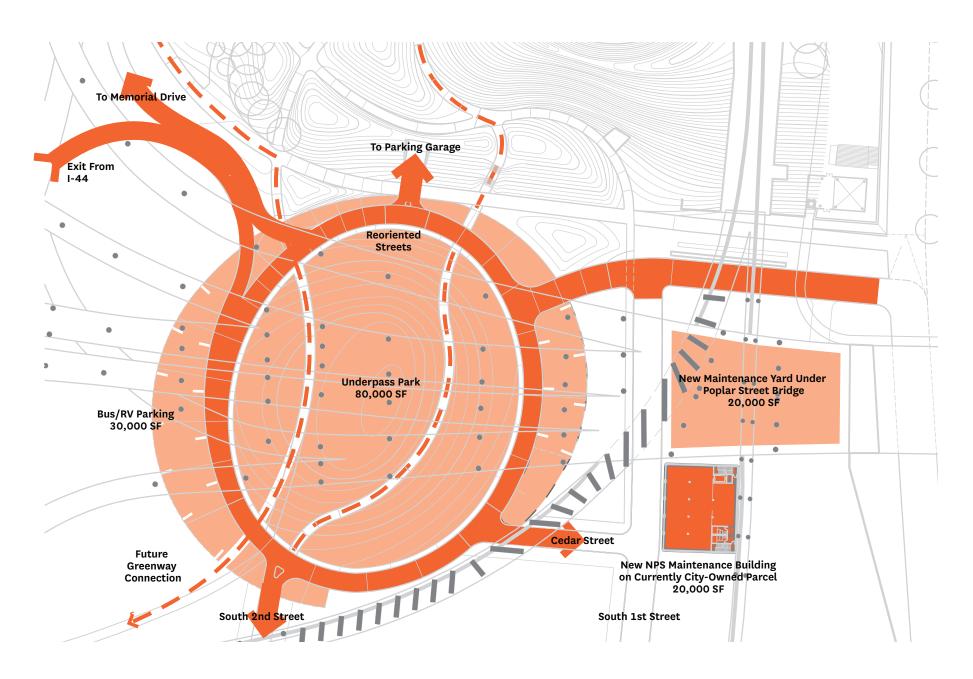


SOUTH GATEWAY: TECHNICAL NOTES 197

EXISTING POPLAR STREET BRIDGE UNDERCROFT

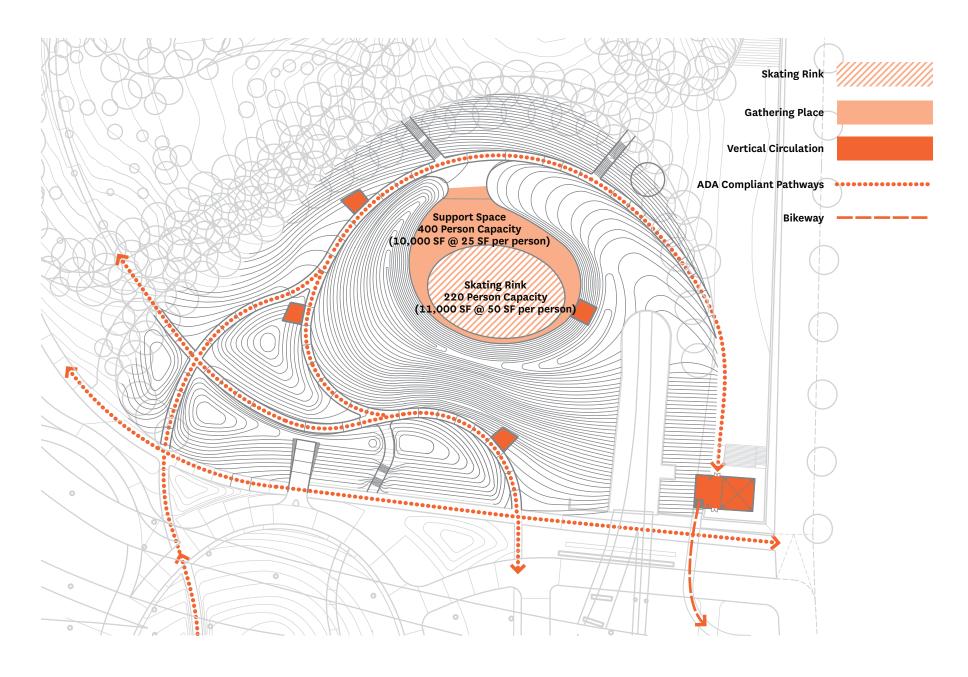


PROPOSED POPLAR STREET BRIDGE UNDERCROFT

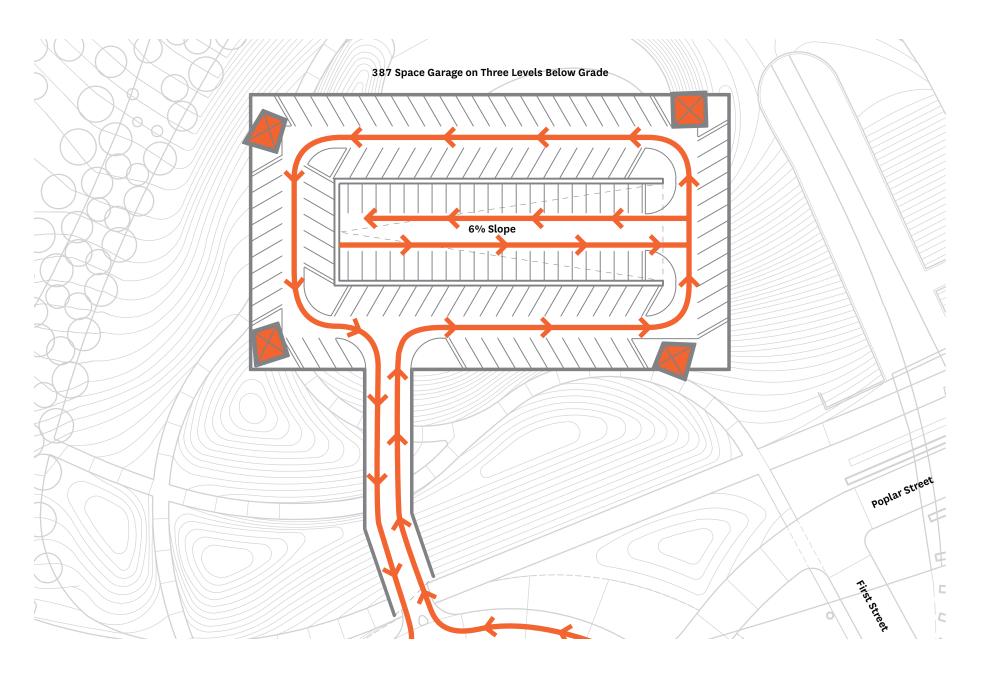


SOUTH GATEWAY: TECHNICAL NOTES 199

ACCESSIBILITY AND GATHERING CAPACITY

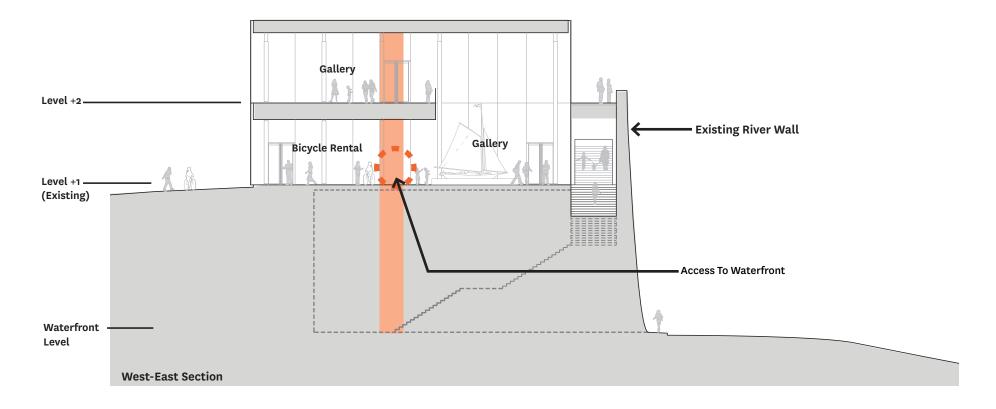


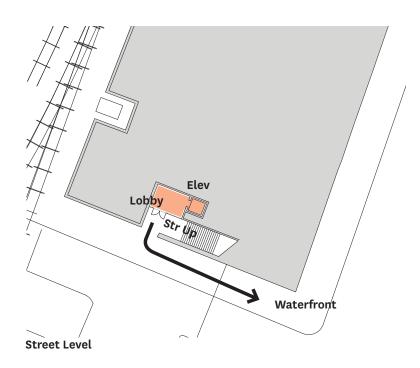
BELOW GRADE PARKING GARAGE

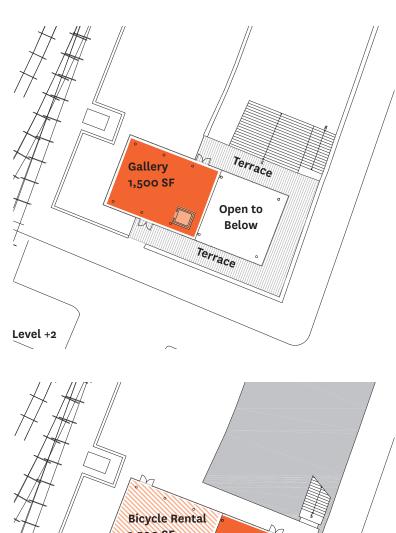


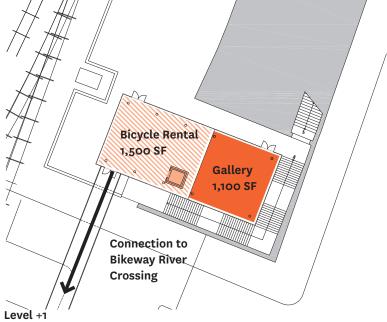
SOUTH GATEWAY: TECHNICAL NOTES 201

OVERLOOK PAVILION & BICYCLE RENTAL FACILITY









SOUTH GATEWAY: TECHNICAL NOTES 203

MAINTENANCE FACILITY



9. JNEM East Wetland Reserve

JNEM EAST WETLAND RESERVE 207

INTRODUCE THE EXPERIENCE OF NATURE TO EVERYDAY CITY LIFE

Historically, the Mississippi River floodplain was a glaciated bottomlands with a mix of forested areas, marshes, wet prairies, and oxbow sloughs. The advent of agriculture and then urbanization fundamentally changed the bottomlands, but traces of its history remain. While the floodplain's hydrological regime has been so heavily modified that it cannot be simply restored, our proposal reconstructs a bottomland ecology within this highly urban commercial and industrial context.

This constructed bottomland ecosystem is also a monument in the making, a counterpoint to the Gateway Arch. The Arch is beautiful but enigmatic—easy to touch but still remote in its immensity. Similarly, the restored bottomlands will be beautiful and touchable, but only from above, and accessible only in certain areas. The monuments on the east and west sides of the Mississippi will be complementary: the Arch will be visible from every corner of the bottomlands via the Canopy Trails, and the restored wetlands will be viewable from the top of the Arch.

ELEMENTS OF THE EAST

ST. LOUIS WETLANDS RESTORATION

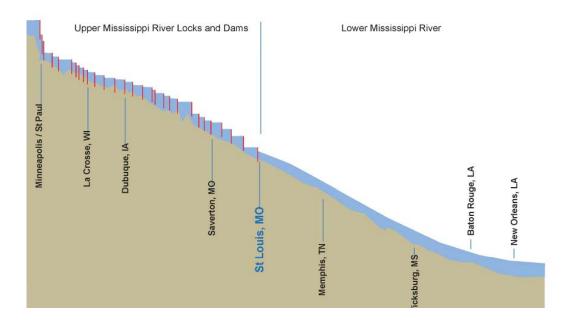
 Forested Wetlands Restoration: Sixty acres of forested wetlands restoration will include forest swamp, scrub/shrub wetland margins, emergent wetlands, and a permanently flooded aquatic bed that will replicate the vegetation and topographic gradients of a historic oxbow slough. The diversity of habitat types will support a variety of terrestrial and avian species, and will serve as a resting place for migratory birds.

- Stormwater Retrofitting: The wetlands restoration also provides a unique opportunity to improve the surrounding neighborhood. The stormwater infrastructure in the neighborhoods immediately to the east of the site is badly in need of repair, diminishing the viability of the neighborhood and its residents. By initiating a program of phased retrofits in partnership with the City of East St. Louis, stormwater can be harvested from the site and used to provide the needed flows for wetlands restoration.
- Stormwater Management: The interface between
 the stormwater produced by highway drainage
 and neighborhood rainwater collection will be a
 stormwater management structure consisting of a
 forebay for screening and basic settling of solids, a
 swirl concentrator for further solids handling, and
 a perched treatment wetlands for initial storage,
 clarification, and treatment of collected stormwater.
 The treatment wetlands will discharge moderated
 stormwater flows to the restored wetlands using a
 structure for managing flows.
- Human Interaction: The restoration will include Canopy Trails that will allow visitors to experience the wetlands without intruding on the habitat space. Visitors will experience the tree canopy in the forested wetlands areas, view seasonal bird migrations, and descend into the restoration site to a visitors' center and interpretive areas. The stormwater management system will also be designed to be open for viewing, allowing direct experience of the hydrology and ecology of the site.





The Jefferson National Expansion Memorial sits at the narrowing of the national hourglass just below the confluence of the Illinois, Missouri, and Mississippi Rivers. The site also marks the highly symbolic point along the Mississippi where the river begins to flow, undammed, to the Gulf of Mexico.



JNEM EAST WETLAND RESERVE 211

THE NATURAL LANDSCAPE



INUNDATED WETLAND



FORESTED WETLANDS

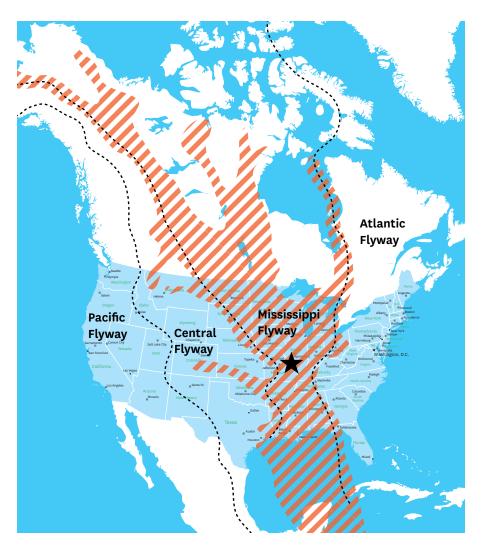


SPIDERWORT



THICK UNDERSTORY

AN AVIAN SANCTUARY

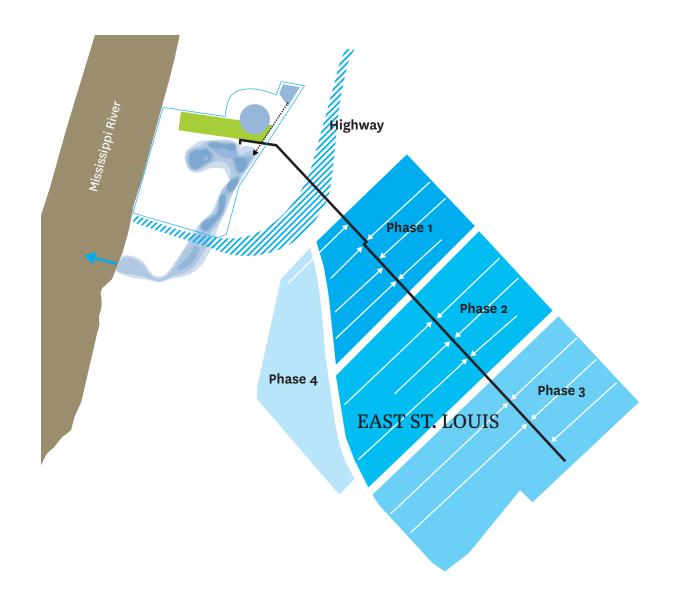


St. Louis is located along one of the narrowest sections of the Mississippi Flyway, the route used by approximately 40 percent of all migrating waterfowl and shorebirds in North America.

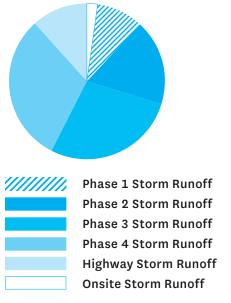


JNEM EAST WETLAND RESERVE 213

STORMWATER



Our proposal benefits both the built and natural environments by collecting stormwater from failing East St. Louis infrastructure and using it to create new working wetlands and wildlife habitat.







DIRECTIONAL BORING MACHINE

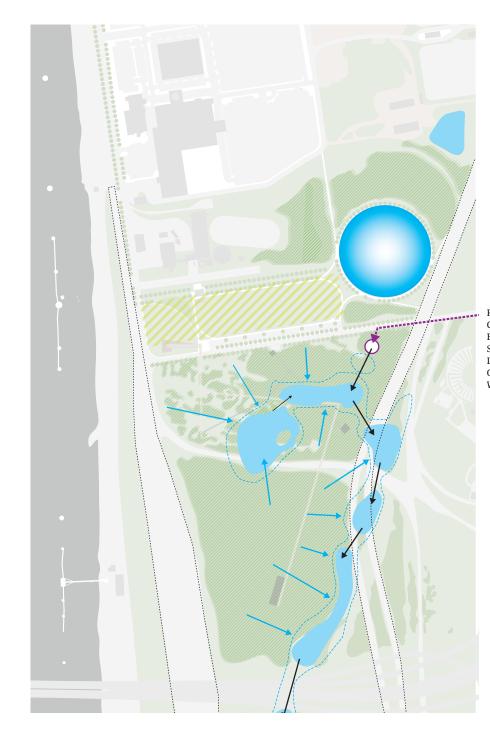
Existing Lawn (Infiltration)

Existing Woodland (Infiltration)

Water Detention

Overland Flow (Run-off)

Subgrade Pipe Connection



Retrofit Collapsed East St. Louis Stormwater Lines, New Outfall into Wetland Reserve

JNEM EAST WETLAND RESERVE 215

THE BUILT LANDSCAPE



CARGILL GRAIN ELEVATOR



MACARTHUR BRIDGE



RAIL TRESTLE



MARTIN LUTHER KING MEMORIAL BRIDGE



CROSS-SECTION THROUGH ELEVATED WALKWAY

JNEM East's Canopy Trails have a light footprint, minimizing their impact on the delicate wetland ecosystem below. Visitors are brought into close proximity to a variety of migratory bird species, but their ability to inadvertently harm the flora or fauna is limited.

JNEM EAST WETLAND RESERVE 217

REDISCOVERING THE AMERICAN PLAINS





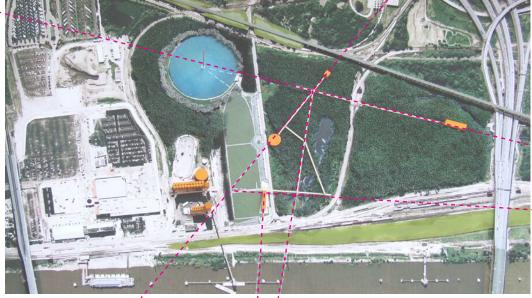
At 35 feet high, the Canopy Trails elevate visitors above the east bank levee and rail berm, where they can better appreciate the boundless horizon of the American Midwest.

BUILDING A NATURAL PRESERVE - ELEVATED WALKWAY AND VIEWS



GATEWAY GEYSER







CAHOKIA POWER PLANT



CARGILL SILOS

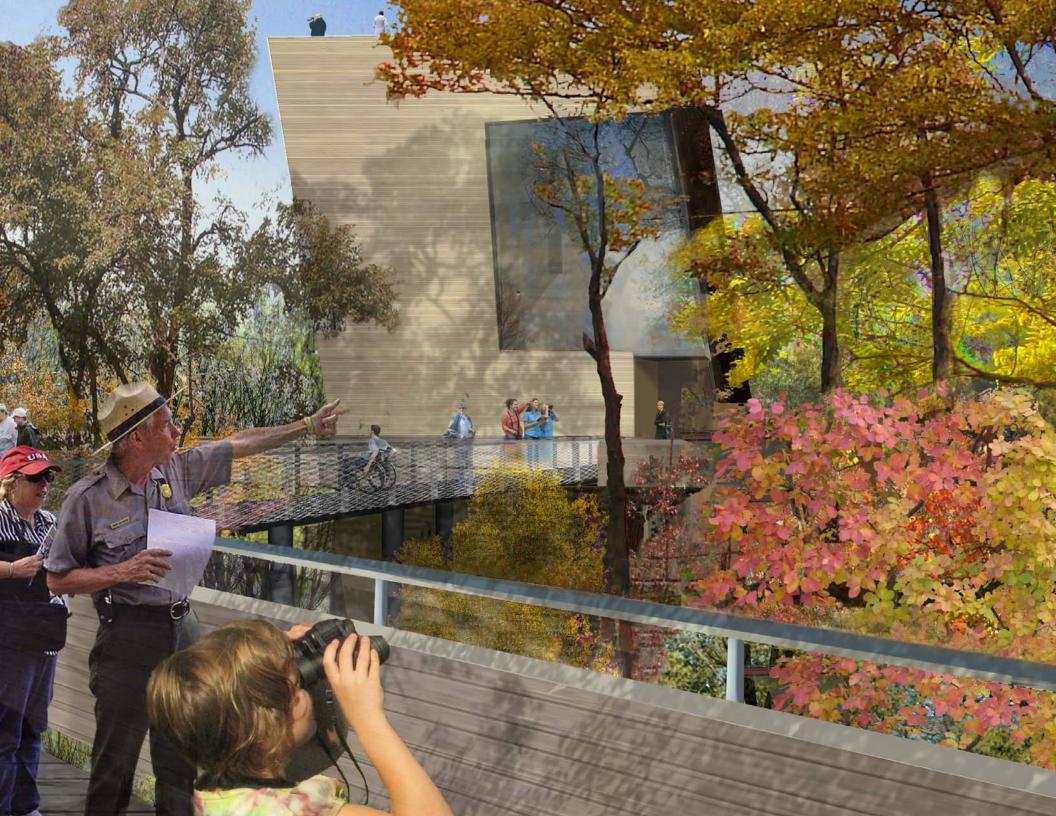


GATEWAY ARCH

This is our study model of JNEM East. The Canopy Trails were structured around axial views of the monumental built forms that impose themselves on the St. Louis and East St. Louis horizons.

JNEM EAST WETLAND RESERVE 219





JNEM East: Technical Notes

STORMWATER STRATEGY

GENERAL OBSERVATIONS AND VISION

The topography of the proposed avian wetlands in East St. Louis is bounded by the levee to the west, a rail berm to the east, upland and built environment conditions to the north, and a remnant historic discharge to the Mississippi River to the south. The ecologically informed design will build on this existing topography by expanding the submerged bottomlands areas and improve hydrologic connections, creating a wetlands that recalls the historic oxbow sloughs of the Mississippi River bottomlands.

PROCESS NOTES

The project team would conduct a thorough review of historic environmental documents in order to determine last occupancy, investigate potential remedial actions, and analyze soils and groundwater data.

For the soils study, Limnotech and ABNA would research site history and regional geomorphology to determine factors influencing soils characteristics. In-place soils would be sampled to determine degree of compaction, and bulk density to serve as a test for hydric wetland soils. Contamination remedies and soil amendments would be proposed as needed (eg. in former rail siding areas). In studying the regional drainage area, Limnotech would gather information on the existing stormwater drainage network and detail a history of past operations. Building on this analysis, the mix of impervious/pervious surfaces would be calculated and stormwater tributaries flow volumes refined.

Upon establishing the historic hydrology, the team will explore the quality of existing stormwater sources by evaluating the current profile of oil/grease/chemical contamination both for existing highway alignments and in East St Louis neighborhoods.

A PHASED APPROACH

As a first step, the project team will seek to establish a joint program for stormwater management between the National Park Service and the City of East St. Louis Department of Water. A phased program of stormwater retrofitting will provide significant benefits the City of East St Louis while providing a regular and clean source of water for the restored wetlands.

Stormwater would be conveyed from the east side neighborhoods by gravity/pumping and by tapping into the existing elevated highway drainage network. It would then be discharged to the restored wetlands and retained for infiltration into groundwater, or discharged across the existing levee wall through the remnant outfall to the Mississippi River.

The high water table throughout the restored wetlands makes it possible to maintain a year-round wet pond central to the wetlands. Groundwater levels will be monitored and form the basis for wetlands establishment and seasonality. Coordination with the City of East St. Louis will be required to ensure that the maintained wetlands levels are compatible with ongoing levee dewatering operations.

ECOLOGICALLY INFORMED DESIGN

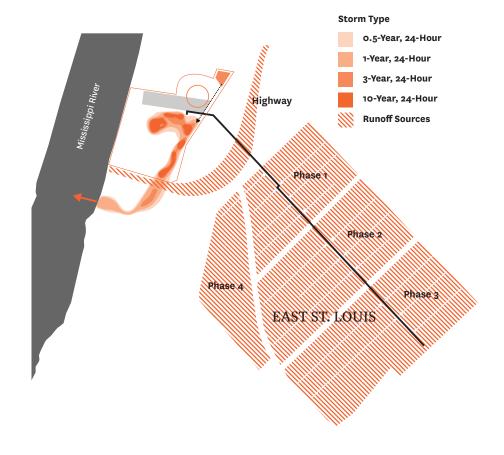
Stormwater gathered from the existing elevated highway and East St. Louis neighborhood would undergo basic treatment for grit removal and oils and greases, with a staged system containing a swirl concentrator, settling forebay, and controlled discharge outlet. The flow would then enter a perched wet pond prior to entering the restored wetlands.

Prior to construction, an inventory of existing native and local plants will be conducted, identifying invasive and preferred species and major ecological zones in the restoration area to determine not only impacts but also potentials. Additional successional species may be added to improve species diversity and encourage vegetative gradients (ecotones) that add complexity and improve habitat function.

At a larger scale, the historic conversion of historic migratory bird habitat to cropland and urban development has profoundly affected the Mississippi River flyway. AES and Limnotech will target wetland restoration efforts to create a diversity of vegetation types, providing cover from predatory species, places for rest, and access to water and food sources. Species will include migratory songbirds, wading birds, and larger birds of prey including the Bald Eagle.

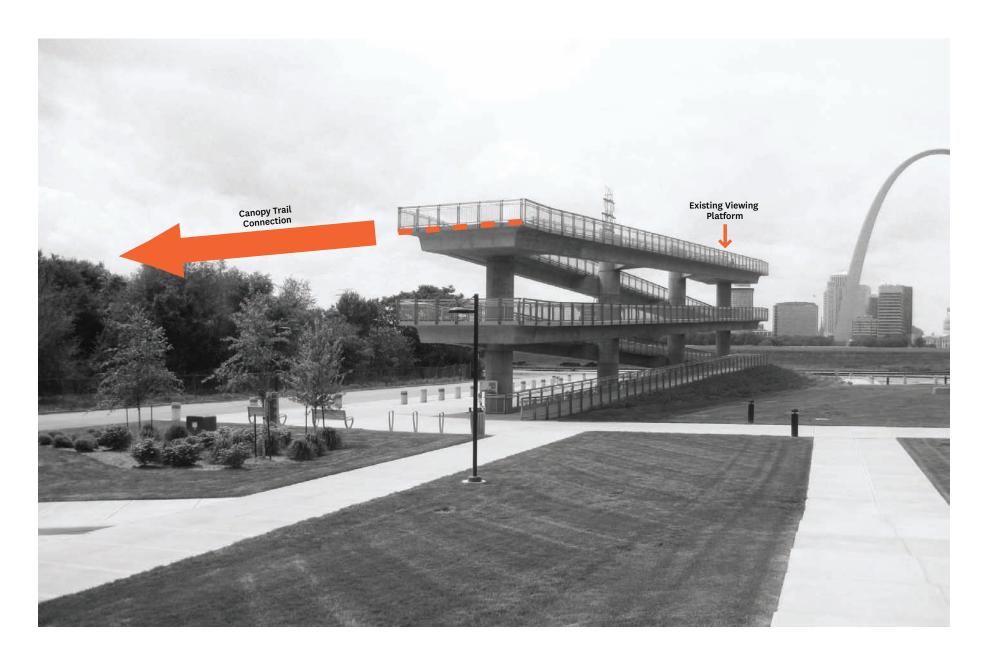




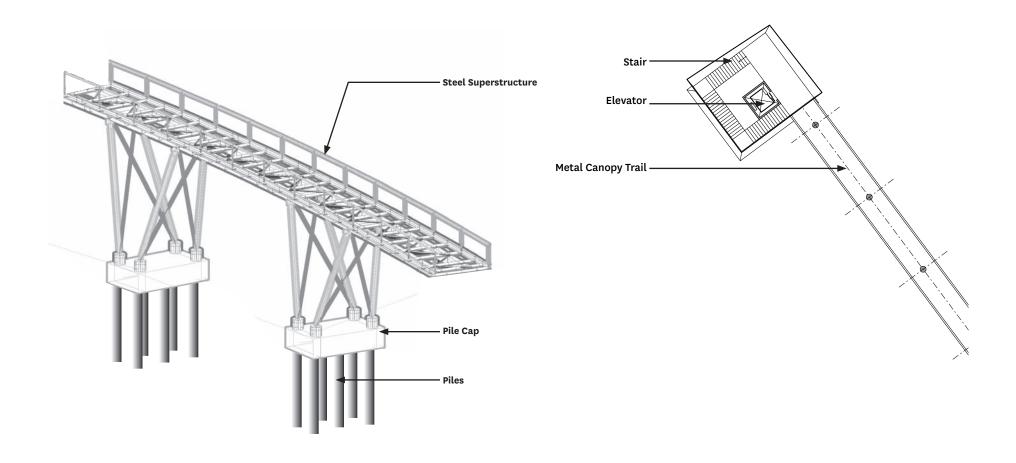


		Generated Volume (thousand cubic feet)				
Event	Precip (in)	Highway Only	Highway + Phase 1	Highway + Phase 1-2	Highway + Phase 1-3	Highway + Phase 1-4
0.5 Year, 24 Hour	2.0	272	629	1,191	1,808	2,041
1 Year, 24 Hour	2.7	378	1,069	2,158	3,353	3,805
5 Year, 24 Hour	4.0	576	2,017	4,289	6,782	7,724
10 Year, 24 Hour	4.6	668	2,490	5,363	8,517	9,709

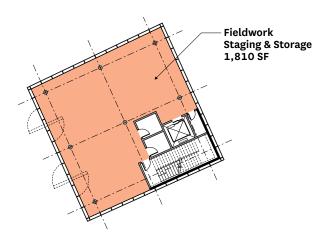
MALCOLM MARTIN W MEMORIAL PARK — MISSISSIPPI RIVER OVERLOOK

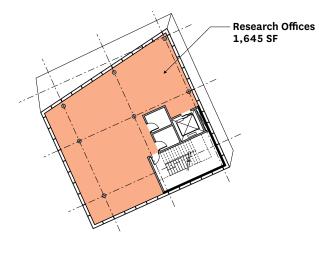


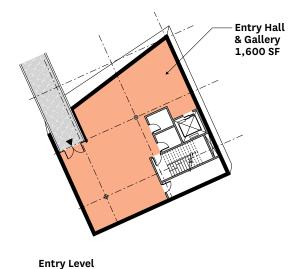
CANOPY TRAIL STRUCTURE & ACCESS TOWER



AVIAN RESEARCH CENTER

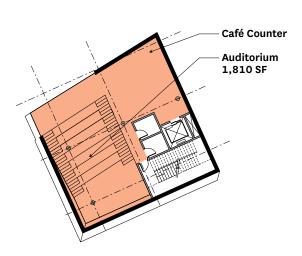


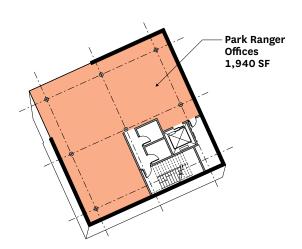


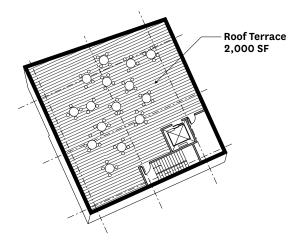


Level -2 (Ground)

Level -1





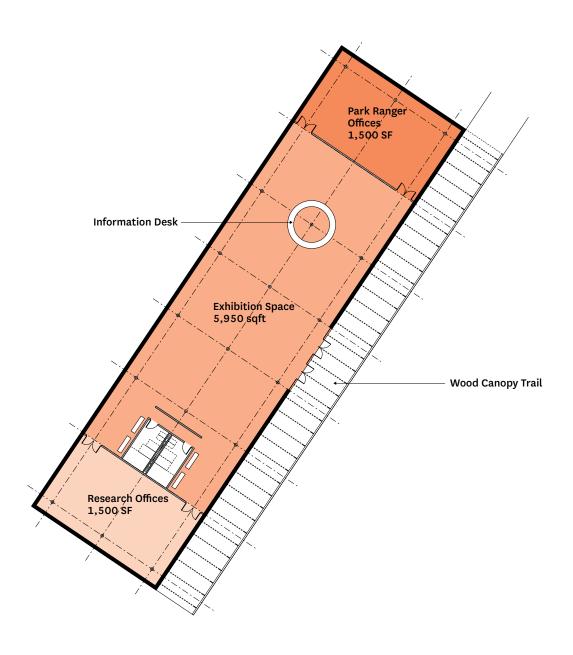


Level +1

Level +2

Roof Level

WETLAND HYDROLOGY RESEARCH CENTER

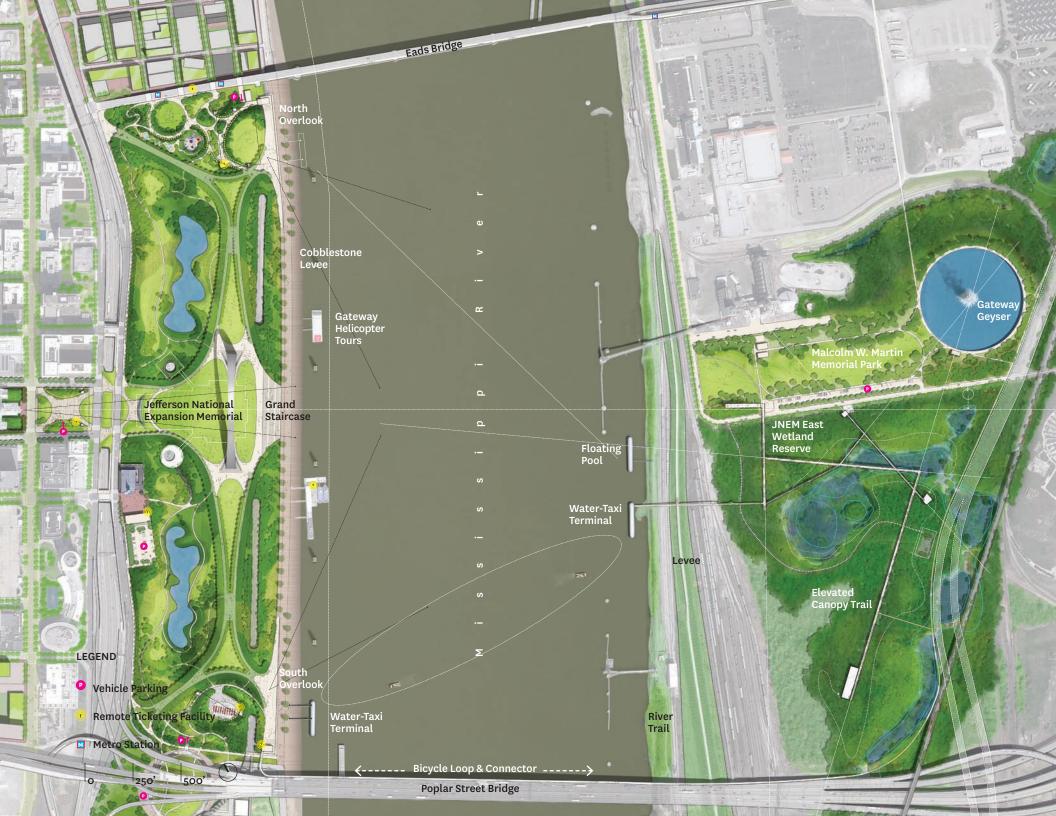


10. Beyond 2015

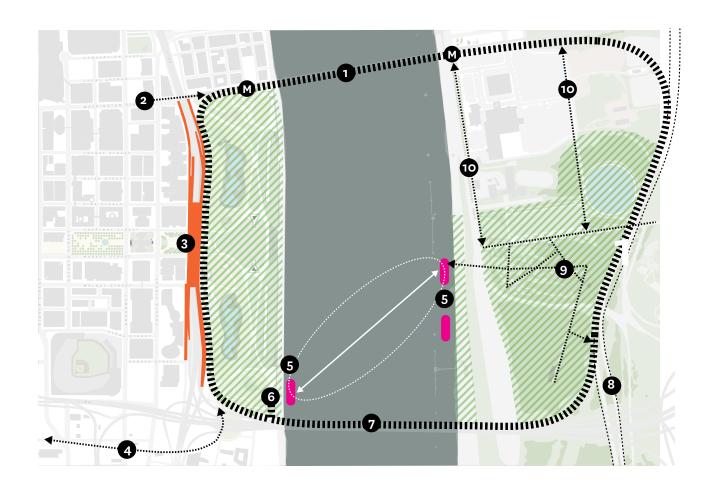
CROSSING THE MISSISSIPPI

While we have proposed an ambitious program of architecture and landscape design that will substantially transform the Jefferson National Expansion Memorial by the deadline of October 28, 2015, we have also kept our eye on more long-term projects that can build on the ambitions and accomplishments of the first phase of work.

In particular, we propose a series of broader infrastructure-related projects that can take the localized success of the 2015 vision and reinforce it at a larger scale. The longer time frame will serve as an opportunity to strengthen the initial connections across the Mississippi River and to find more ways to tie the Memorial into a larger regional system of open spaces and non-motorized transportation networks. Our long-range plan revolves around several discrete interventions that combine to create a new loop of pedestrian and bicycle connections, appropriating portions of existing infrastructure in order to make the Memorial into a single site that is bisected by the largest river in North America.

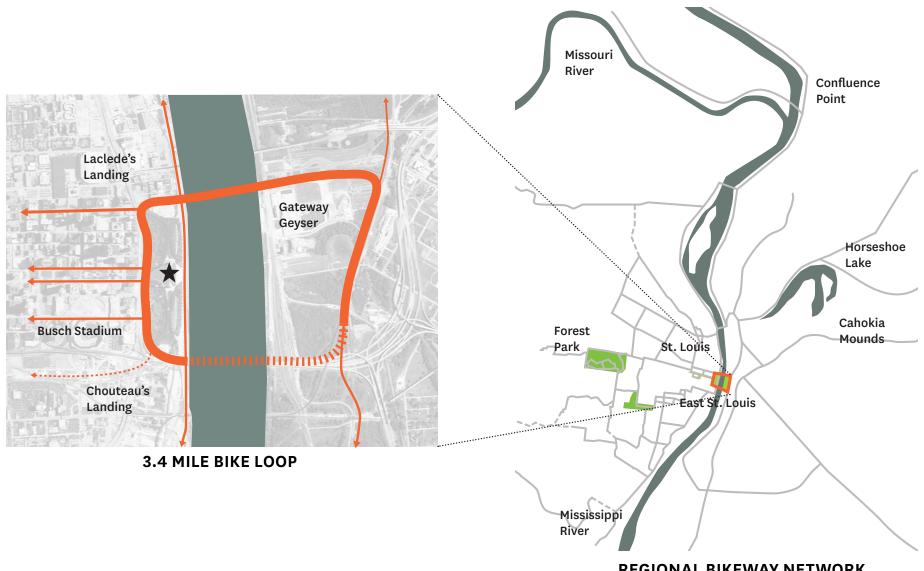


STRENGTHENING CONNECTIONS ACROSS THE RIVER



- Eads Bridge Bicycle
 Lanes
- 2 Improved Pedestrian Access to Metrolink
- Memorial Drive
 Modifications
- 4 Proposed Greenway
 Connection
- 5 Floating Pavilions
- 6 South Overlook
 Pavilion
- Mississippi River
 Connector
- 8 Proposed Route 3
- 9 JNEM East
- Proposed Front
 Street Connection

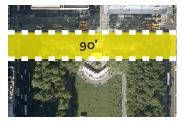
BICYCLE LOOP AND REGIONAL CONTEXT



REGIONAL BIKEWAY NETWORK

BEYOND 2015 237

THE FIRST 100 FEET



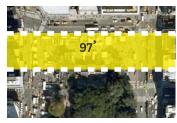


BRYANT PARK
New York, New York





6TH AVENUE New York, New York





UNION SQUARE New York, New York





LES TUILERIES
Paris, France





CENTRAL PARK
New York, New York





MILLENNIUM PARK
Chicago, Illinois

Successful urban parks have thick edges. These rims, usually around 100 feet deep, define how the park is seen from the city and invite and organize multiple choreographies of approach. It is the experience of these first 100 feet that determines whether or not a visitor will want to venture further into the interior. A deep, penetrable, highly trafficked edge that serves as a physical and programmatic gradient between city and park is perhaps the most surefire guarantor of a park's success. This can be seen in acclaimed parks all over the world.



MVVA study model of the Jefferson National Expansion Memorial, indicating the potential for "thick edge" programming in the Arch grounds' first hundred feet.

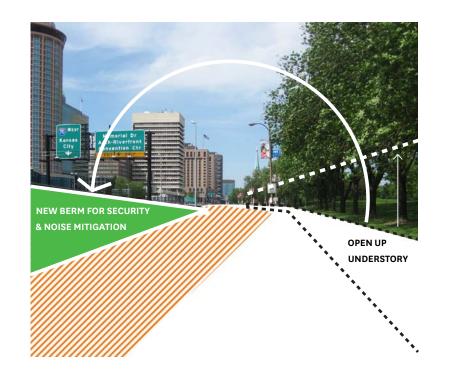
CREATING A THICK EDGE

We propose ultimately removing the eastern side of Memorial Drive and consolidating northbound traffic into a new two-way local avenue on the city side of the Interstate 70 trench. Both Arch-bound and through traffic will be absorbed into the downtown core, making better use of the existing capacity of 4th Street and Broadway and further incentivizing the use of the public parking supply.

In place of the removed traffic lanes, a new highly permeable linear edge landscape, including welcoming points of entry at the east ends of Walnut Street, Pine Street, and Washington Avenue, will give the Memorial a comfortably navigable perimeter and will serve as the western side of our proposed bicycle loop. The new edge, approximately 100 feet deep, will also have the advantage of being programmatically flexible. Future planning projects will be able to carve out landscape rooms that could be filled with buildings or park space as new Park Service needs arise.



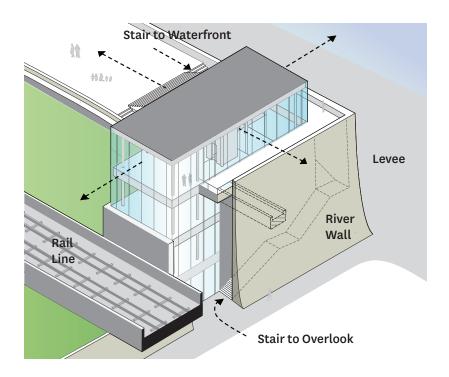
EXISTING





PROPOSED (2015)

SOUTH OVERLOOK



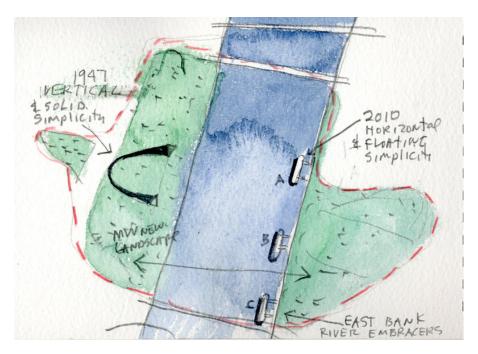


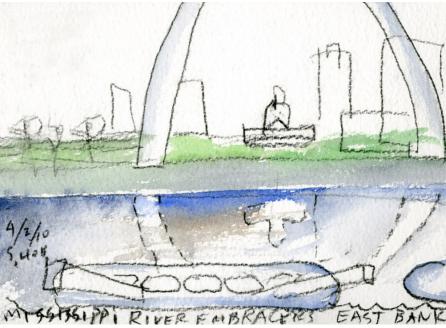
The South Overlook will house a bicycle rental facility and a direct connection from the Overlook to a new pedestrian and bikeway river crossing closely associated with the existing Poplar Street Bridge (in order to minimize disturbances to existing river currents and shipping channels). The new bridge—an extradosed span system that mimics the 600-foot span of the Poplar Street Bridge—will tie into the JNEM East Wetland Reserve's canopy trails and will circle north to a dedicated lane on the Eads Bridge, connecting many of the major attractions in both the Metro-West and Metro-East regions.

PEDESTRIAN BRIDGE AND BICYCLE RIVER CROSSING

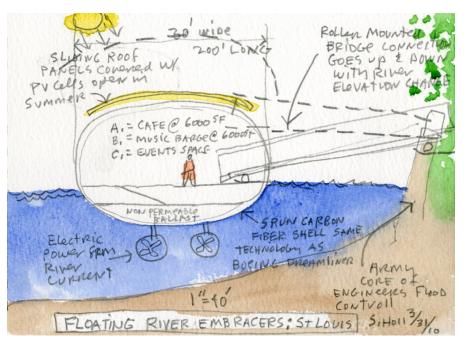


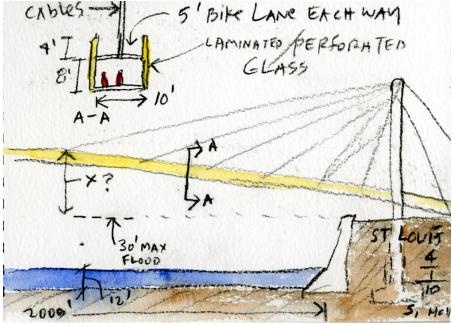
FLOATING PAVILIONS — CONCEPT SKETCHES



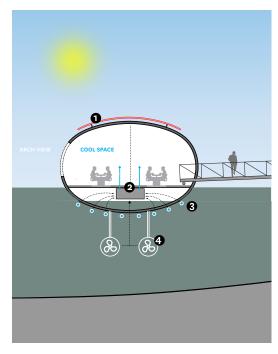


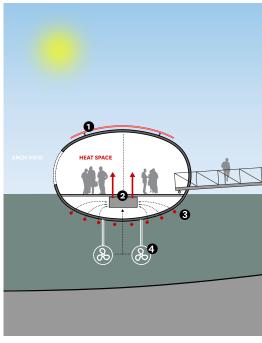
A series of floating pavilions, serving as water taxi terminals, cafés, or floating swimming pools, will animate the waterfront on both sides of the Mississippi and echo the industrial architecture of the Cargill grain conveyors. These Steven Holl watercolor sketches show the development of the concept.

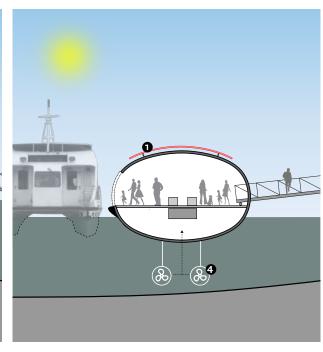




FLOATING PAVILIONS — ENERGY STRATEGY







SPRING / HIGH FLOW / CAFÉ

WINTER / MID FLOW / EVENT SPACE

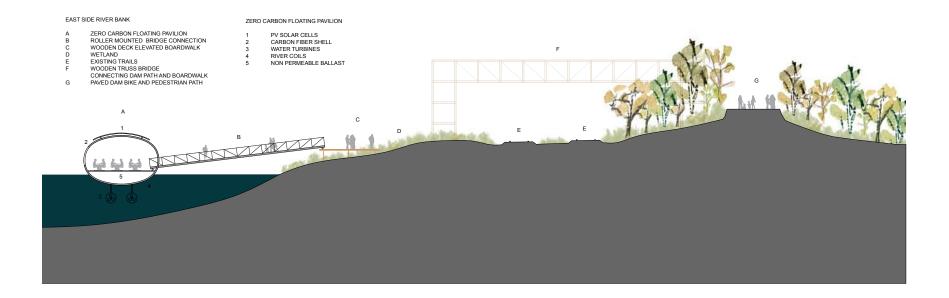
SUMMER / LOW FLOW / WATER TAXI TERMINAL

- Photovoltaic Cells Convert Sun Energy to Electrical Power
- Heat Exchanger and Heat Pump/ Chiller Provides Heating/Cooling
- 3 River Coils
- Water Turbines Convert River Current to Electrical Power

SUSTAINABILITY ON THE WATER

The floating pavilions will be designed to be zero-carbon structures, with climate controlled entirely through solar power, river turbines, and heat exchange via river coils.

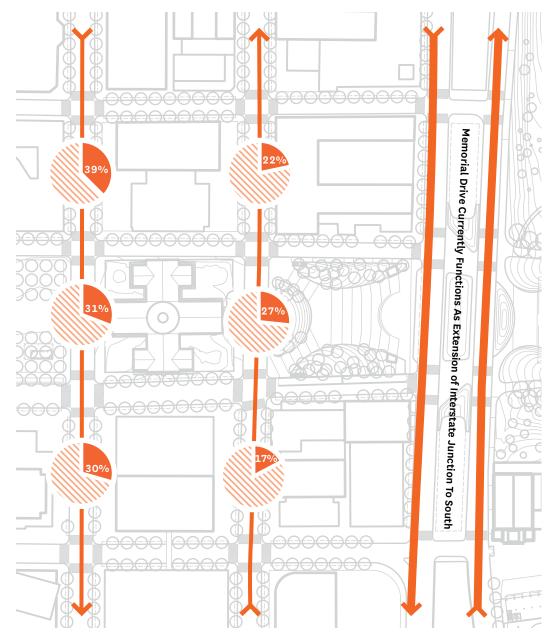
FLOATING PAVILIONS — EAST ST. LOUIS MOORING



Beyond 2015: Technical Notes

BEYOND 2015: TECHNICAL NOTES 249

THROUGH-LANE VOLUME TO CAPACITY ANALYIS - EXISTING CONDITIONS



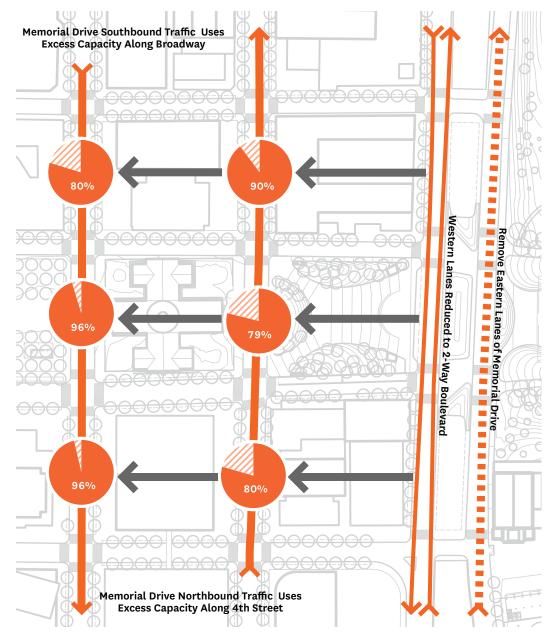
2009 Existing Volume To Capacity Ratios

		2009 - Broadway (Southbound PM)				
		Walnut to Market	Market to Chestnut	Chestnut to Pine		
Volume	veh/hr	1152	1200	1441		
Lanes	#	5	5	5		
Capacity	veh/hr	3900	3900	3900		
v/c Ratio	% utilized	30%	31%	37%		
		2009 - 4th Street (Southbound PM)				
		Walnut to Market	Market to Chestnut	Chestnut to Pine		
Volume	veh/hr	676	1040	840		
Lanes	#	5	5	5		
Capacity	veh/hr	3900	3900	3900		
v/c Ratio	% utilized	17%	27%	22%		

Assumptions

- 1. Capacity estimate represents LOS D for Class 3 and Class 4 roads according to Exhibit 10-7 in HCM 2000
- All volumes represent total one-way approach volumes: through movement plus turning vehicles
- 3. Traffic volumes represent values from 2009 NPS Memorial Drive Closure Traffic Study prepared by AECOM
- 4. NPS Closure study gives 2011 no-build volumes which include 1% annual growth rate over 2009 plus additional estimated trips generated by Ballpark Village development
- 5. 2015 volumes include 1% annual growth rate onto 2011 volumes, plus rerouting of traffic due to closures of Market Street and Chestnut Street over the I-70 trench
- 6. 2030 volumes include 0.5% annual growth rate over 2015 volumes, plus shift of all traffic from Memorial Drive to Broadway (NB) and 4th Street (SB)

THROUGH-LANE VOLUME TO CAPACITY ANALYSIS - LONG TERM PROJECTIONS



2030 Projected Volume To Capacity Ratios

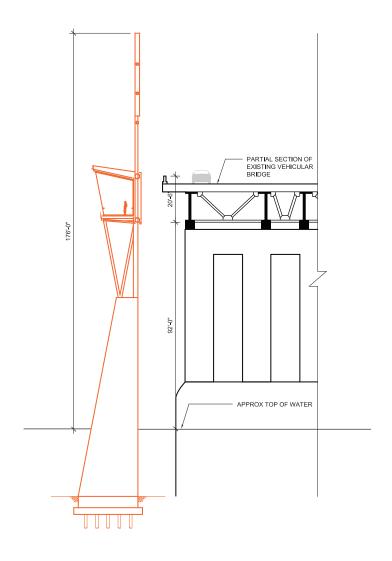
		Broadway (Southbound PM)				
		Walnut to Market	Market to Chestnut	Chestnut to Pine		
Volume	veh/hr	3759	3726	3116		
Lanes	#	5	5	5		
Capacity	veh/hr	3900	3900	3900		
v/c Ratio	% utilized	96%	96%	80%		
		4th Street (Northbound PM)				
		Walnut to Market	Market to Chestnut	Chestnut to Pine		
Volume	veh/hr	3108	3081	3500		
Lanes	#	5	5	5		
Capacity	veh/hr	3900	3900	3900		
v/c Ratio	% utilized	80%	79%	90%		

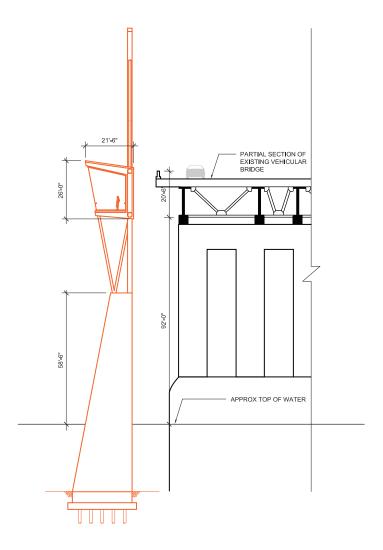
Assumptions

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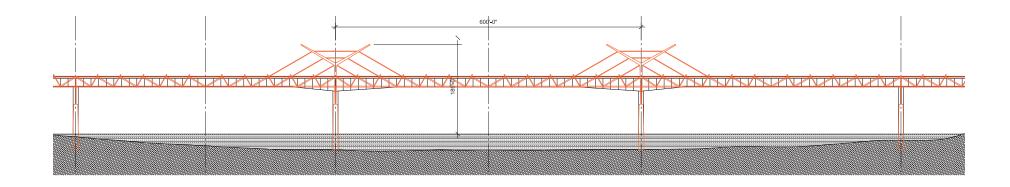
BEYOND 2015: TECHNICAL NOTES 251

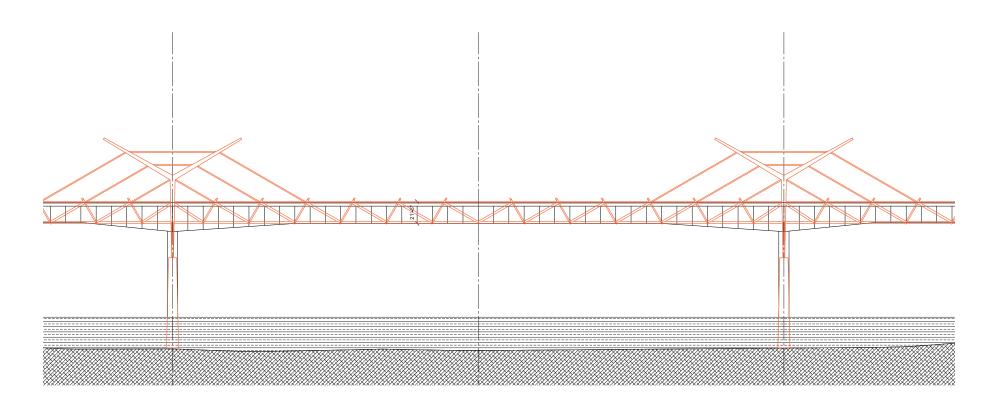
EXTRADOSED BRIDGE CROSS SECTIONS





EXTRADOSED BRIDGE NORTH ELEVATION





BEYOND 2015: TECHNICAL NOTES 253